Telephony.

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As to Public Ownership of Telephones.

Much has been written and declaimed both for and against the operation of public utilities by the municipality, the state, or the national government. The proponents of public ownership advance an array of arguments in its favor which appear entirely conclusive. Its opponents offer as many more against it, which appear equally conclusive. But, when the question is reduced to its final terms, it becomes one of purely practical results. How has it worked when it has been tried?

With the desire to handle this problem in an entirely unbiased manner, we are presenting this week rather voluminous extracts from some articles which have appeared in recent issues of the North American Review, and which deal with the matter of public ownership from the negative side. The author, Sydney Brooks, is referred to by the editor of the Review as "an experienced student and an alert British writer, who has had opportunities of comparing the customs and institutions of both England and the United States." He paints a most unattractive picture of the results of public ownership of the telephone industry. Whether one agrees or not, his views are worthy the attentive reading of telephone men generally.

How the New York Commission Handled a Mooted Point.

A practice, or a desire to establish a practice, of attaching to the wires of a telephone company telephones or other devices not furnished by the telephone company itself, has caused many a manager grief and has frequently aroused hard feeling on the part of the subscriber toward what he deems an arbitrary and absurd position.

In a ruling just handed down by the New York Public Service Commission, however, the New York & Vermont Home Telephone Co. was sustained in opposing such a procedure. A subscriber brought the matter to the commission's attention, stating that the company was charging fifty cents a month for an extension telephone which should not cost over ten cents, and asking that he be allowed to install an extension telephone at his own expense, both at his office and at home, which might be attached to the lines of the company.

The commission divorced the two issues, giving the complainant permission to renew his complaint as to the rental charge if he so desired. As to the other it held that if it were to grant the relief asked for, it would necessarily, throughout its entire jurisdiction, have to permit the unlimited connection of extension telephones by subscribers to the service without charge and without control of the character of instruments connected or their maintenance by the telephone company. This practice, the commission said, would be so obviously improper that it could not be sanctioned by that body, and that it was unnecessary to have a hearing upon any case which involved such relief only.

A Common Sense View of Competition.

It is not unusual to find in a periodical covering the general field editorial expressions of opinion regarding competition which read almost as though they had been written expressly for an Independent telephone publication. Such an one appeared in the current issue of Collier's, under the caption, "Competition and Manners." It is here printed, without further comment. "In the days when the store at the cross roads was the only one in eighteen miles, the storekeeper with his feet on the counter might continue his target practice at the sawdust box until he had finished telling the loafers how he caught six coons up one tree, while the impatient customer waited for him to reach the period where he would turn and aggrievedly demand, 'Something?'

"When there was a store on each side of him, and one across the street, he learned to put on a clean shirt, sweep the floor, smile, and say, 'Good morning! How's crops?' When Mrs. Height's husband has three competitors crowding him close, she does not snub the wives of his patrons. Where a man is undisputed boss of his territory, either in business or politics, he is too strongly inclined to acquire the manners of a despot. Given plenty of competition, he soon learns to rub off sharp corners, bottle up hasty temper, restrain glaringly selfish inclinations, and treat his fellow men with consideration.

"Good manners are infectious. When the merchant and the

railroad, and the politician and the professional man become polite to all the people, the people rapidly acquire good manners also. There are some who are instinctively courteous and well mannered regardless of any material consideration, but most men's manners are shaped, like their lives, by forces that make their daily bread. Note the difference in graciousness between the candidate who gets the nomination from a political boss, and one who must go before a primary. Observe the improvement in manners of a street railway with an expiring franchise.

"There may be a waste in competition, but it is usually of the sort that graciously fills the people's baskets with the fragments."

The Indianapolis Convention.

While the program of the Indiana Independent Telephone Association for the annual convention, to be held next week Wednesday and Thursday, at Indianapolis, indicates only the principal speakers and the routine business, it is more than probable that discussions will arise and problems will be threshed out which will be of the highest importance to every Independent telephone man in the state and in adjoining states as well.

Manford Savage, president of the National association, is to make an address, and Mr. Savage does not talk against time. He usually has some message to deliver and proceeds to do so with dispatch and effectiveness. Judge Hunter, president of the Indiana association, will undoubtedly, in his annual address, touch trenchantly upon matters of moment in the state, as well as upon those of wider bearing. And Judge Hunter, too, is not accustomed to mince words.

The situation in Indianapolis is, beyond question, slated for a prominent part in the discussions. In his article this week Mr. Kelsey calls upon the members of the association to take up at these meetings the merger proposition there and make absolutely sure that, in case a merger is accomplished, their interests will be fully protected, with reference to long distance connections. This is too important a thing to be lightly passed by and every man who can possibly attend should be there.

The report of Walter J. Uhl, secretary and treasurer of the state association, will be of great interest. Mr. Uhl's figures from all parts of the state and his conclusions with regard to them are of more than common significance this year because of the situation which now obtains in Indianapolis.

In short, the registration should be larger this year than ever before and the meetings should, and undoubtedly will, be better attended and more closely followed. Also there is said to be an excellent series of displays arranged for by the manufacturers and dealers. It will not do to stay at home this year. If you never attended the Indiana convention before, do it now!

Some Suggestions as to Educating the Public.

The weekly bulletin of one of the large Independent companies, in a recent issue, sets forth some practical suggestions to mangers along the lines of educating the public to an intelligent comprehension of just what telephone service means. The points are brought out as follows:

> In talking about the telephone business those who are actively engaged in it are apt to overlook the fact that, while the telephone is used about as much as any other service or commodity, there is little known about its methods of operation and little thought of its great value and usefulness.
>
> It is lamentable that of the millions of people who use a telephone service but few have ever seen a telephone switchboard, or have ever given a second thought to the extreme advantages accruing to the public in the use of the service.
>
> Because of this condition, it is well for telephone managers to frequently call their subscribers' attention to these points, making comparisons of the benefits of the service as compared with the service of other utilities or enterprises.
>
> Few people stop to consider that the real reason for complaints of service, if there are such complaints, is because the public has been given so much better service in telephony than it has had from other utilities that it has become accustomed to instantaneous telephone connection with the parties sought, and becomes complaining and disagreeable if the least delay or error is made.
>
> The telephone subscriber will go into a man's store or office and sit about for fifteen to thirty minutes, waiting for a chance to talk to him, whereas, if he had to wait half a minute at the telephone, he would consider the service abominable.

It should not be difficult to make a reasonable man appreciate this and to convince him that, if he experiences an occasional delay of seconds, they are really neither minutes nor hours. Patience on the part of the user will at times work wonders.

What Happens To The German Unfair Competitor.

The laws of Germany are very strict regarding false representation in advertising writes the United States consul general, at Berlin. The extreme penalty for such action is imprisonment for a year or a fine up to 5,000 marks ($1,190), or both.

The clause in the law bearing on this matter is, in part, as follows:

> Whoever, with intent to call forth the appearance of an especially advantageous offer, shall in public announcements or communications intended for a larger circle of persons, as touching business relations, especially as touching the character, origin, manner of production, . . . the motive or purpose of sale, . . . shall knowingly make false representations tending to mislead, is liable to imprisonment up to one year and to a money penalty up to five thousand marks, or to one of these punishments.

In addition, the person convicted of false advertisement is subject to the rather poetic penalty of being compelled to insert another advertisement in a certain number of newspapers, stating that he has been convicted of unfair competition. The judge usually dictates the advertisement and requires its insertion in from twenty-five to a hundred papers.

What a hit that would make with telephone men if it were in force in this country!

Some Points on Securing Business Over the Telephone*

Fourteen Practical Suggestions for Soliciting and Obtaining Orders by the Use of the Wire—An Illustrated "Telephone Catalog," a Catch Phrase for Telephone Number, Bell in the Window, Some of the Novel Ideas Here Described

By Marshall Jewell Bailey

THE extent to which the telephone may be used to increase sales is limited only by the salesmen's ability to originate and apply schemes for getting customers into the habit of ordering goods by that method. Few business concerns, large or small, can afford to neglect the possibilities afforded by the telephone for keeping in communication with their customers. One great store in Philadelphia, at a conservative estimate, credits at least half of its 25 per cent. increase of business during 1911 to a persistent campaign for telephone orders. Here are fourteen of the countless methods that have been, and are now, successfully used by various business concerns to solicit purchases over the wire.

A western department store recently issued an illustrated catalogue that contained the names and portraits of the telephone operators in each department. When the prospective customer looks for the number of any department, he finds, at the head of the page, a photograph of the girl who will answer his call. This establishes the personal relation that is such an important factor in salesmanship. Customers feel that they are, in reality, talking to a real person, instead of to a corporation represented by a voice—a person who is there to give personal service much the same as the clerk behind the counter.

Should there be any mistake in filling the order, it may be adjusted through the individual telephone salesperson who took it. Telephoning *an individual* whom the customer knows, even in this remote manner, is likely to become a habit—a convenient, time-saving habit that writes orders that may be given readily and quickly. Especially is this true when in each department the orders are received by a salesperson who knows the stock.

These unique telephone catalogues, in an unusually effective way, compel attention to the convenience of buying by telephone. At first, these catalogues were sent out in every outgoing package. They were also sent to mail-order customers with a printed enclosure that solicited long distance "emergency calls," and offered expeditious service and expert help in the selection of goods. It was impressed upon the customer's mind that such orders would be marked "discretionary," and were returnable. This proved to be one of this catalogue's strongest selling points. Also, a leaflet of instructions was issued to the telephone operators in this store. Here are a few extracts taken at random from it:

"An employe should be ready to talk to the customer as soon as the connection is completed. Get the name, address and telephone number of the calling person as early as convenient in the conversation. Speak in a moderate tone directly into the transmitter with lips close to the mouthpiece. When the telephone rings, answer promptly with the name of your department. Avoid the words 'well,' 'hello,' or 'what is it?' Be quick and to the point. Finish every conversation you start. Never fail to say, 'Is there anything else, or another department to which I may transfer you?' Never evade a complaint. Show real regret that there has been cause for complaint—genuine pleasure in correcting it. We want everyone in this store family to regard the telephone as a help and a means of his or her development. It will pay you as well as it does the store."

So wide is the range of merchandise carried in a well-stocked hardware store, that most people fail to appreciate all the goods that might be purchased there. In one small hardware store the telephone directory was used to widen the field of prospects.

This dealer had his name placed in the classification list in the back of the telephone directory under several classifications, even those with which the hardware business has but indirect connection. According to the directory, he was a bell hanger, a locksmith, a dealer in butcher's supplies, a cutlery sharpener, and many other functionaries. Technically, he may not have been all he claimed to be; but he was directly associated with men who were, and in turning telephone orders over to them, he was assured that they would buy their supplies from his store. But his main object was to educate the public into the habit of *telephoning orders to his store.* In this respect, the slight expense of having his name appear as many times has proved a profitable expenditure.

Establishing the Personal Relation.

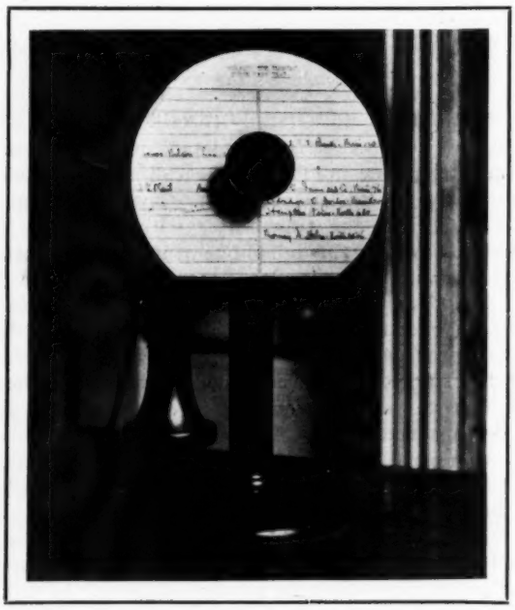
Recently, a clothing stock was destroyed by fire. The proprietor first replaced the glass show windows. Across the top of each window, dropped low enough to prevent a view of the work within, he pasted a large paper sign with his telephone number covering nearly half the space. Above the number was the one word "Remember!"

A number of telephone instruments, borrowed from the local telephone company, were placed on the floor of each window. Around the transmitter of each was a circular

*Reproduced from the April issue of System, The Magazine of Business, Chicago, through the courtesy of its editors.

card also bearing the number and the word "Remember!"

A small card on the transmitter of each telephone read: "April 24 is the date! Better 'phone your orders—there'll be an awful rush!" Thus the opening date as well as the telephone number was fixed in the observer's mind.



A Florist's Plan for Keeping His Number Prominent.

In this merchant's own words: "I did a ripping telephone business that day, and the people had never seen the goods either. I guess they read our telephone newspaper advertisements. You know they were along the same line as the window, only somewhat more explicit."

A telephone number that pleases the ear is easily remembered. One sporting goods dealer fortunate in this respect worked up a successful advertising campaign by a catch phrase. Street cards, bill boards and newspapers were used to burn into the mind of the public this couplet:

JUST—FOR, OH!
FOR ONE!
THAT'S OUR TELEPHONE.

This was invariably accompanied by the name and location of the store. Also, in each case, the words, "Sporting Goods" were prominently displayed so that this number would come to mind when anything in that line was needed.

This phrase has become so popular through persistent advertising that occasionally vaudeville actors in that town work the phrase into their jokes.

At the start, a great deal of money was expended in giving publicity to that number, but, according to the manager of this store, orders received over the wire have actually doubled his business. And much out-of-town business is secured through this unique advertising. For instance, when a local tennis team went to a neighboring city on a short trip one summer, and several of the players found that they needed new rackets, "4041" got the order, whereas another store had been supplying these players when at home.

This merchant also maintains a "minuteman" delivery service. A boy and a bicycle are held in reserve through the day for special emergencies. If the boys at the baseball field need a new ball in a hurry, "4041" gets the order. Or, if a customer at home, clad in slippers and smoking jacket, finds that he is out of tobacco, "4041's" minuteman is pressed into action. The size of the order makes no difference in the speed of this service.

A well advertised, easily remembered telephone number, combined with such service, gives this merchant a monopoly on the telephone orders for sporting goods in his town.

Ordinarily—for it is but human nature to follow the path of least resistance—we prefer to call a telephone number that comes to mind, rather than search a telephone directory, as was illustrated in the case of the store just mentioned. A harness maker utilized the same principle. He put his telephone number in large black figures directly above the name on his bill heads, to fix it in his customers' minds. Another advantage was the fact that when a bill proved unsatisfactory or contained an error, he usually heard from the customer at once. The telephone number was a gilt-edged invitation to call him up and have the matter settled satisfactorily—and, perhaps, deprive the customer of an excuse for deferring payment.

In the window of a drug store located on a corner is a sign which tells the public that a ticket entitling the bearer to a free telephone call will be given with every purchase over twenty-five cents. The checks are good at any time, and the bearer has the use of any of several private telephone booths.

This druggist finds that often customers who wish to telephone will walk two blocks farther and make a twenty-five cent purchase rather than pay a nickel for using a

Judicious Use of the Telephone and Card Index May Extend a Salesman's Territory Ten-Fold.

telephone nearer at hand. Also, he says that this plan has paid for itself a hundred times over by his increased soda and cigar business alone. In the summer months, an average of seven out of every ten women who come in to use

Druggists Attract Trade by Free Telephone Checks.

the checks, stop at the soda fountain, and about as great a percentage of men will buy cigars.

Another good feature of the plan is that the public has gradually come to use this telephoning station as a common meeting place—a custom that makes this druggist one of the most popular in the city.

Another young druggist, a man who recently started a store of his own in a suburban town, had about exhausted all his resources in fitting up a model establishment. He came to the conclusion that it would take something out of the ordinary to attract business to his stand. Finally, he hit upon a "telephone premium" plan.

Through local papers and circular letters, he told the public that between certain hours on a certain day each week the customer who telephoned an order to his pharmacy—"The Telephone Pharmacy," he called it—nearest a secret time (the time to be posted with his banker) would receive a large box of candy free.

This plan proved to be a winner. Many people in the neighborhood, when they needed anything in his line—some of the needs were inspired by a desire for a chance to win the candy—used the telephone and learned the telephone-your-order lesson. In the short space of six weeks, this young man reported that his sales had increased somewhat over 40 per cent.

Most business men from force of habit will turn their heads at the ring of the telephone bell. Cognizant of the fact, a haberdasher had the bell box of his telephone placed in his show window, out of sight. A long cord was used so the telephone could be placed on a table some distance from the window. The bell could be heard plainly by passersby.

This window is on one of the main streets. Hence, the occasional telephone ring attracts considerable attention. Fully half the men who are passing the store when the bell rings will look toward the window and often they will stop—and read a large placard in his window: *"My telephone is a busy one. 'Phone your order to me and save time and money."*

In connection with this plan, this haberdasher also solicits telephone orders through newspaper advertising. He knows from experience that the average man will use this time-saving method of buying provided he is assured the dealer will give satisfaction.

One of the largest eastern manufacturers of ice cream says that 80 per cent. of his local business comes over the telephone wire—yet he is not satisfied. Each alternate year all his wagons are repainted, and every time, during the last six years, his telephone number is printed in larger figures than appeared in preceding years, followed by this terse command: *"Phone Your Orders."* Also, on souvenir match boxes for men and on match safes for the housewife's kitchen, appear only the 'phone number and this command: "For the best ice cream 'PHONE MAIN 330."

A tailor who recently established a dyeing, cleaning and pressing department, uses the telephone in a special effort to build up that part of this business. He not only advertises prices 20 per cent. lower than the usual prices, but also gives a rebate of five cents on all telephone orders. He sends a uniformed messenger for the clothes, which are tagged with a price card reading, *"Phone Rebate 5c."* The second month his telephone calls averaged twenty a day. He credits much of his success to the five-cent telephone rebate.

A clever selling plan was recently inaugurated by a garage. It distributed a number of nickeled automobile wheels with a shield, on which space is reserved for the initials of the owner of the machine. The shield is designed to fasten to the radiator cap. Across the back is the enameled name of the garage and the telephone number—in large figures. Now and then, every automobilist is forced to use the telephone, and the enameled number has attracted more than the normal share of emergency orders.

A store recently inaugurated a campaign for telephone orders. One of its most effective methods was a novel telephone window into which the switchboard was temporarily moved. An operator of more than passing attractiveness was paid a special sum for working in the window. In an adjoining window were a number of telephones geographically arranged. Each instrument bore a card with the name of a suburb or a definite section of the city on it—mutely suggesting the wide scope of telephone

TELEPHONE CALLS FREE
WITH EVERY PURCHASE OVER 25C WE GIVE YOU A CHECK GOOD AT ANY TIME FOR USE OF OUR PRIVATE TELEPHONE AND BOOTH.
ASK FOR THE CHECK

A Retail Idea Where Unlimited Service Prevails.

service. A big show card which bore the firm's telephone number in ten-inch figures was placed conspicuously in the background of each window.

Telephone advertisements were placed in the newspapers, offering bargains that could be purchased only by telephone. But this firm's advertising manager considered

his show window advertising more resultful in proportion to expense than any other plan he has used.

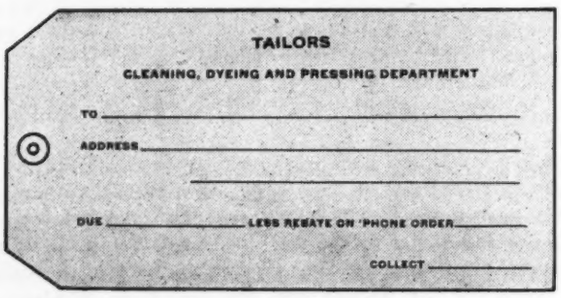
Another retail establishment inaugurated an apparently expensive "free toll service." This service was announced by an explanatory advertising campaign. Twenty-five thousand people in suburban towns were given the privilege of calling this store by telephone free of charge, either to place an order or to inquire about goods.

Anyone whose name was listed in the local telephone directory was placed on the firm's credit list. Customers who lived in suburban towns were invited to use the store's telephones to call their homes while they were in the store —also free of charge.

This is undoubtedly one of the broadest and most liberal telephone policies now practiced in department stores. But more than one store has found it profitable.

A similar case is that of the small town merchant who, by special arrangement with the local telephone, makes it possible for patrons in an adjoining town to call his store without toll. By this arrangement, a merchant near the town limits line gets a considerable amount of patronage, especially from customers just across the line.

"My telephone number is Three double O. The person who writes the best rhyming couplet that includes this 'phone number will be given free choice of the sewing machine, the bicycle, or the gold watches now on display



A Scheme Which Increased Trade 50 Per Cent.

in my show window. The two lines of poetry must not contain more than ten words each. One 'phone contest tag will be given with each ten cent purchase at my store. Try it. You may be a poet and don't know it. One of these twenty-five dollar prizes is worth trying for. See them. This contest is on now and closes August 30.

This announcement by a merchant in a small town was followed by the publication of the best attempts at versification in his newspaper advertisements—a scheme that more than doubled his telephone orders.

The task of getting customers into the habit of telephoning their orders is equaled by the task of keeping them in that habit. This is where good service enters. The operator who receives the order must give just as good service as the clerk who fills it. To be tactful in talking to customers "over the telephone" is an important and delicate task. There are branch telephone switchboard operators with financial firms who receive a salary of two thousand dollars a year and over. The telephone salesman and saleswoman has become a factor in the economic scheme of distribution.

May Transfer National Corporation Stock.

An order has been issued in the United States Court at Wheeling, W. Va., granting the Commonwealth Trust Co., of Pittsburgh, permission to transfer on its books, the stock of the National Telephone Corporation and its subsidiary companies. The order also gives the trust company permission to enter suit.

Program for Railway Telegraph Superintendent's Meet.

The program for the 31st annual meeting of the Association of Railway Telegraph Superintendents which is to be held at the Waldorf Astoria hotel, New York City, June 4 to 7, has been practically arranged. The meeting will be opened with an informal reception at the Waldorf Astoria on Monday evening, June 3.

Business meetings will be held in the morning and afternoon of Tuesday, June 4 and for the evening a theatre party has been arranged. During the afternoon, the ladies will be taken on sight-seeing tours of the city in automobiles.

Wednesday morning will be devoted to business and the afternoon will be occupied in tours of inspection of the Western Union Telegraph Company's headquarters and New York Telephone Company's Cortland street exchange. The ladies will spend the morning in shopping. In the late afternoon a trip will be made to Coney Island by boat.

Business sessions will be held Thursday, both morning and afternoon, and in the evening an entertainment will be enjoyed at a roof garden. The ladies will be entertained on this day by a boat trip around Manhattan Island.

On Friday, June 7, the association will be the guests of Thomas A. Edison at West Orange, N. J. The day will be occupied in an inspection of the Edison works where many things of interest will be shown by Mr. Edison.

In the evening the party will journey to Traverse Island in automobiles, where a clam bake will be a feature of the entertainment at the country club.

The papers which are to be presented at the convention are as follows:

"The Use of the Main Line Relay in Telephone Selector Operation." By W. W. Ryder.

"What the Telephone has done for the Santa Fe." By L. M. Jones.

"Construction, Materials and Methods." By R. E. Chetwood.

"Some Facts Regarding the Handling and Recording of Supplies." By W. R. Higgins.

"Telegraph Traffic." By W. N. Fashbaugh.

"The Maintenance of Telegraph Lines." By G. M. Yorke.

There may be several other papers added to this list later.

It is expected that the attendance at this year's convention will be the largest in the history of the association. The program as arranged is an extremely good one and indications point to a most successful convention in every respect.

Secretary P. W. Drew has sent out circulars regarding hotel rates and accommodations and other information of interest to members expecting to attend the convention.

New Rates in Effect in Baltimore.

The new telephone rates, as agreed upon by the Maryland Public Service Commission, have gone into effect in Baltimore, ending the unlimited telepehone service in that city. All telephones are now on a measured service basis. Many subscribers have refused to make contracts under the new arrangement.

It is contended by the Chesapeake & Potomac Telephone Co. that the new rates are a reduction from the former scale, but this is denied by many subscribers, who say that while this condition might have been in the minds of the commission it failed in its purpose, since the company has placed such a construction on certain clauses as to increase the annual cost, even in cases where the measured service was in force before.

The chief protest against the new rates, other than that caused by the discontinuances of the unlimited service, is the fact that no device has been perfected to register the number of calls made. It is contended by many subscribers that the company's record is often at fault and they have no redress.

Some Disadvantageous Aspects of Public Ownership

British Writer Points Out Evils of Government Control of Utilities, State or Municipal — Comparison of English and European Telephone Systems with Those in United States Points to Conclusion that Private Initiative Is Much More Effective

Sydney Brooks, in a series of articles dealing with "Aspects of Public Ownership," which have been appearing in the North American Review, has dealt some heavy blows at a doctrine which, as recently commented on by this paper, is assuming larger proportions today than ever before.

In one of his articles Mr. Brooks takes up the telephone in England, the recent transfer to the post office of that country of the National system, not previously controlled by the government, giving especial point to the selection of that example. It is also typical, he says, of conditions in nearly every European country, most of which exercise a government monopoly of telephones and telegraph.

"A comparison between the results obtained under the European and under the American systems in developing and placing at the public service an invention which in the last thirty years has established itself as an indispensable convenience in commercial and social life ought," says Mr. Brooks, "to throw some light on our inquiry."

As a preliminary he declares "that the country which has done most to improve the telephone, both technically and commercially, and to popularize its use, is the country in which its management and development have been, and are still, exclusively the work of private enterprise. (America).

THE TELEPHONE'S RECEPTION IN ENGLAND AND EUROPE.

"The history of the telephone in Europe has run on very different lines. Regarded at first as an offshoot of the telegraph, it was naturally offered for sale, first of all to the European holders of the telegraph monopolies—that is to say to the post offices and governments of the various countries. The governments, partly because they looked upon the new invention as an interesting toy and nothing more and partly because they were rightly reluctant to invest public money in a new, untried, and highly speculative venture, one and all declined to take it up on their own account. At the same time they were willing to issue licenses to companies formed to exploit Graham Bell's invention, and they took the precaution, in case the telephone should prove, after all, a commercial success and a serious competitor of the state telegraph systems, to issue these licenses for restricted periods and to surround them with onerous conditions. When time had shown telephonic communication to be both practicable and popular, the companies were bought out or otherwise absorbed by the state and in most of the leading European countries the telephone became, and has since remained, like the telegraph, an official monopoly."

"Incidentally," he continues, "it may be noted that, while some seventy municipalities were granted powers to start local telephone services of their own, only six actually embarked on the enterprise and of these six four were but too glad to sell out their undertakings in a very few years either to the post-office or the National Telephone Co. The experiment showed that, in Great Britain at any rate, municipalities could not hold their own successfully against a well-organized commercial company and that their attempt to do so not only contributed nothing to the development of the telephone industry, but proved in every case a source of public annoyance and considerable financial loss to the local taxpayers. Although they possessed, while the company did not possess, the right to tear up the streets at will, and although their enterprises were heartily backed by all the advocates of public ownership, none of them made a success, or anything approaching a success, of their telephone services."

Briefly reviewing the manner in which the state, by hampering and strangling private enterprise in its attempted development of the industry, finally took it over at terms which he asserts were marked both by inequity and impolicy, Mr. Brooks goes on to compare the development in the United States with that in Great Britain and on the continent, as follows:

RESTRICTED DEVELOPMENT ONE CONSPICUOUS RESULT.

"Take first the test of numbers. The well-known English expert, Herbert Laws Webb, writing some eighteen months ago and taking as the basis of his comparison the total number of telephones in each European country and the number operated under the Bell system in America—which is, of course, considerably less than the total number of telephones in use throughout the United States (less than one half.—ED.)—found that the telephone development in Europe in 1910 was almost exactly one-tenth of the American Bell system in proportion to population. That is to say, while the Bell system furnished Americans with 64 telephones per thousand inhabitants in Europe there were no more than 6.4 telephones per thousand people.

"If the comparison had been between all the European telephones and all the American, whether in or out of the Bell system, it would have shown that a thousand people in Europe have one telephone where a thousand Americans have fifteen. If the telephone had been developed in Europe on the same scale as the Bell system in America, Great Britain would have about four and a half times as many telephones as she actually possesses, Germany four times as many, France over ten times as many, Russia six thousand times as many, Sweden twice as many; Austria-Hungary twenty times as many, Switzerland three times as many, Norway the same, Denmark twice as many, Italy over fifty times as many, Holland seven times as many, Belgium ten times as many, Spain ninety times as many, and Portugal, Greece, Servia, Bulgaria and Roumania about the same.

"In Germany, France, Austria-Hungary, Switzerland, Belgium, Italy, Greece, Bulgaria, Servia, and Roumania the telephone is a state monopoly; and in only two of these states—Germany and Switzerland—has anything approaching a success been made of it. In Sweden, Denmark, and Norway, where also the results are comparatively satisfactory, the government and private companies work side by side, though with increasing difficulty. Taken as a whole, therefore, it will be seen that private enterprise as practised in America has been overwhelmingly more effective in diffusing the benefits of the telephone than public ownership, or than private enterprise in official leading-strings, in Europe. And if a comparison could be instituted not merely between numbers, but between the efficiency of the services provided in Europe and in the United States, the disparity, I believe, on the technical and commercial sides, and particularly from the standpoint of the consumer's convenience, would be found to be even greater.

PRIVATE OWNERSHIP, PROGRESS—PUBLIC OWNERSHIP, STAGNATION.

"Private enterprise has given America the best and the biggest telephone service in the world, while public ownership in Europe has hindered its development, impaired its usefulness, and inflicted incalculable losses on many millions of people by depriving them, or supplying them with nothing more than a parody, of the speediest means of communication that human ingenuity has yet invented."

Mr. Brooks asserts, and cites facts in support of his claim,

that public ownership means stagnation in the matter of improvement and the use of obsolete apparatus instead of the utilization of new devices.

"Not all, but certainly a great many, of the objections to public ownership would disappear," he says, "if we could be sure that all public utilities had reached a final and static form and were never henceforward to be exposed to the danger of supersession by newer inventions. But so long as mechanical progress continues and old methods are displaced by new ones so long must governmental undertakings from time to time become obsolete or be threatened with an exhausting rivalry. And when that happens, when a new utility is discovered menacing some established state monopoly, the history of the telephone in Europe tells us what we may expect. . .

State Owned Systems Obsolete and Inefficient.

"With scarcely an exception the states that took over the telephone in its infancy, and within a few years of its first introduction, have lamentably failed to keep pace with the inventions and devices that have raised it in the United States to the top notch of perfection. They find themselves encumbered today with antiquated plant, apparatus of a kind that in America went to the scrap-heap twenty years ago, and crude commercial practice. . .

"Throughout the length and breadth of the continent hardly a single efficient long-distance service is to be found. Why is this? It is partly because the governments have shrunk from putting sufficient capital in the business and have thus forfeited one of the principal advantages that the advocates of public ownership claim for it over private enterprise, while at the same time, in countries where the telephone has not been made a government monopoly, the system of issuing limited licenses, terminable at the end of a fixed and usually too brief period and under indefinite conditions as to the repayment of capital, has hindered the flow of private investment.

"Mixed up with the routine of a great government department, and linked especially with the administration of the telegraphs, which in no country, I believe, brings in any revenue to the state, and subject to a variety of political influences that have nothing to do with, and are often opposed to, business-like and economical management, the official managers of the state telephone systems in Europe have found it practically impossible to get the money necessary for the proper development of their enterprise. And just in proportion to its extreme technicality both on the scientific and the commercial sides, the telephone industry, in its early experimental years particularly, asked venturesomeness, faith in the future, an instant readiness to adapt new discoveries, and an incessant expenditure without any immediate return."

Government Administration Narrow and Non-expensive.

"But," he continues, "alertness and enterprise such as this cannot reasonably be expected from a government department. The characteristics of the bureaucratic mind and temperament forbid it. The organization of a government office, with a virtually irremovable staff, forbids it. The spirit of officialdom, with its traditions of subordination, its narrow professional outlook, its unwillingness to concentrate responsibility, its insensible stifling of initiative, forbids it. When humanity has reached the plane on which the ideal of social service is a stronger incentive to sound administration than the hope of gain, and when politicians are inspired solely by an informed desire for the public good, things, may be different.

"But at present a government office cannot raise and discipline its staff to the same level of efficiency as a commercial corporation, cannot act with the same freedom and directness as a board of directors, cannot pursue a business object without deference to a hundred influences and considerations from which a president of a company is exempt and which all militate against the first principles of commercial success and cannot, therefore, display the same open-mindedness and elasticity, the same speculative foresight, the same promptitude in taking risks, without which an industrial undertaking, and especially one which is just groping its way from the experimental to the practical phase, is doomed to failure and stagnation.

"The marked and pervasive unprogressiveness of the great majority of the state telephone systems in Europe is not an accident. It is the inevitable result of the constitution of governments if not of human nature itself. I believe I am right in saying that not one of the innumerable discoveries that have transformed the technical and commercial management and development of the telephone in the last thirty years has emanated from a department of state, that European governments have been the last to adopt them, and that the verdict which experts are obliged to pass upon them, with perhaps one or two exceptions, is that they have not learned their business.

"A government, it must be remembered, is debarred, or feels itself debarred, from utilizing the most powerful of all the weapons of modern commercial enterprise—it cannot advertise it is cut off from the hundred and one expedients that are needed to explain and popularize a new invention; and one of the reasons for the comparative backwardness of telephone development in Europe is that its usefulness has never been properly brought before the public and that the various state departments, charged with its management and expansion, have never sought subscribers, but have waited for subscribers to come in of their own accord.

How Politics Affect the Rates.

"Another and hardly less potent reason is that political pressure has induced the fixing of rates at a figure which could only be maintained by a progressive sacrifice of efficiency. Practically all the governments of Europe in their conduct of the telephone industry have made the vital and fundamental error of seeking efficiency through economy instead of economy through efficiency. They failed at the outset to recognize that an untrustworthy and dilatory service is dear at any price and finding it politically impossible to raise the rates to a remunerative figure and being equally unwilling to bear the losses that a first-class service on a basis of unprofitable fees would have involved, they have ended by giving the telephone a bad name and by making it throughout the greater part of the continent synonymous with all that is incompetent."

Carrying his comparison to that of the two systems which were, until the first of this year, operating largely in the same field in England, Mr. Brooks says: "For practically a decade the post office and the National Telephone Co. have been working side by side in the development of the London telephone service. The published accounts show that, though the post office pays neither rent nor rates nor taxes, its working expenses have been 73 per cent. of its gross receipts, whereas those of the private corporation have been only 56 per cent. of its gross receipts. Clearly, therefore, the telephone business is not going to be handled by the state with anything like the same economy as though it were under a strictly commercial management.

Slow to Adopt Improved Equipment or Methods.

"Will public ownership and operation prove as enterprising as private initiative, as prompt to discard obsolete methods and apparatus, as quick to adopt new inventions, as skilful and aggressive in gathering in subscribers? Nobody with the example, on the one hand, of state telephones in Europe before him, on the other, of what has been accomplished in the United States . . . can for one moment believe it. If the central battery were to be superseded by some more efficient device one may be tolerably sure that the British post office would be the last to experiment with the new improvement;

if automatic telephones or wireless telephones were suddenly found to yield better results than the present system, one may be tolerably sure that official recognition of the fact would follow far in the wake of private recognition and private utilization. It is not an absolute and universal rule that the state must always lag behind the individual and the corporation in the qualities of inventiveness and enterprise—it was a government, for instance, that designed the "Dreadnought"—but it is so nearly an absolute and universal rule that the exceptions to it are negligible."

PRIVATE ENTERPRISE UNDER STATE CONTROL MOST EFFECTIVE.

In conclusion Mr. Brooks says: "It is an exceedingly tenable proposition that the low rates charged in England are really delusive and have only been made possible by sacrificing the prime essential of a rapid, expanding, and dependable service. . . .

"The question, therefore, from the standpoint of the community resolves itself into this: Is it better for a nation that its telephones should be in the hands of the state, run without thought of profit, charged for at a low rate, and administered by comparatively inefficient and unenterprising methods, or that its telephones should be managed by a private corporation (or corporations.—ED.) under state supervision and regulation, working for a profit, charging on the whole a higher tariff, but striving for and attaining a maximum of efficiency, progressiveness, and reliability? That is the problem; and the evidence and arguments I have adduced seem to me to show clearly to which side the balance of public advantage inclines.

"Whether to correct abuses or to promote the common welfare, the history of the telephone in Europe and in America shows private initiative under state control to be a far more effective instrument than public ownership and public operation."

In a subsequent article, discussing electric light and power and steam railway administration by the government and by municipalities, Mr. Brooks refers to the "niggling parochialism" which "frustrated the developments demanded by the public interests." An investigation of the Belgian railways disclosed the fact that "state management had brought with it excessive centralization and red tape, an abnormally large and ill-disciplined staff whose salaries accounted for 60 per cent. of the total expenditure, and a lack both of initiative and responsibility among the heads of the various departments."

In equipment, the Belgian state system, "being virtually free from the pressure of competition, is far behind the British railways." He declares it to be a fact that, "wherever nationalization obtains commerce is compressed into rigid schedules and that only those railroads that are administered by private companies and under the spur of competition display the elasticity that can alone satisfy the infinitely varied and complex requirements of modern trade."

COMPETITION AN ACTIVE FEATURE OF PROGRESS.

Mr. Brooks dilates upon the demonstrated peril of politics in public ownership and then mentions one other feature of such control—the practical impossibility of securing the highest grade of expert advice.

"Here, indeed," he says, "we touch on one of the gravest disadvantages of public ownership. Directive ability, as all modern economists, even the socialists themselves, now agree is a vital element of industrial productivity; and anything that diminishes the available supply of inventive capacity, energy, initiative, and ingenuity, or that diverts it from the industrial field, lessens to that extent the national wealth and output. But we have seen that the bureaucratic control of commercial undertakings is unfavorable to the higher kinds of managerial capacity.

"No government, no municipality in the world, has yet solved the problem of attracting to its service the ablest men, or of testing their competence in the conduct of business enterprises, or of furnishing them with a stimulus that automatically extracts from them the best of which they are capable, or of eradicating politics from the workings of officialdom. These are difficulties that are overcome day by day and almost unconsciously by the normal union of promoter, capitalist, and manager.

"Whatever may be said against it, this combination does at least offer higher and more tempting rewards than any form of governmental employment; it exerts a more salutary influence on character; it brings to the front men whose abilities have been thoroughly appraised in the school of experience; it corresponds to that prime factor of all progress—the very human longing for gain and distinction; it makes, therefore, for the maximum of productivity, and consequently of employment and wealth."

Telephone Service at International Bowling Tournament.

At the International bowling tournament held recently in the big Dexter Park pavilion at the Stock Yards, Chicago, complete telephone service was furnished by the Illinois Tunnel Co., which operates the Independent telephone system

How the Tunnel Co. Utilized Its Opportunity.

in Chicago. Each of the eighteen bowling alleys was equipped with a telephone set for communication between the official score clerks and the men on the score. Each line was provided with two keys on a secret listening set located in the office of the officials of the tournament so that complete supervision could be had over the work of the score men. One key associated with each line allowed the chief scorekeeper to listen in without the knowledge of the others. A second key permitted the line to cut in and talk. All these lines were equipped with return call signals.

The complete satisfaction of the bowling people is indicated in the following letter:

"The officers and directors of the Chicago Bowling Tournament Co. hereby concur in the unqualified endorsement of your automatic telephone service furnished for the Twelfth International Tournament of the American Bowling Congress.

"The special service supplied by you for scoring purposes on the eighteen alleys met with the very exacting requirements of the American Bowling Congress and the company, and received the highest praise from the men who were responsible for accurate scoring at this meet."

The advertising done by the Tunnel company at the bowling tournament was up to the minute, as may be seen in the illustration.

The bowling tournament telephone arrangement was another one of the many clever publicity "stunts" engineered by Harold D. Stroud, whose talking clock for automatically giving the time to the Tunnel company's subscribers was recently described in TELEPHONY.

The Louisville Home Company's New Branch Exchange

Complete Description of Modern Addition to Kentucky Independent's System—Equipment and Apparatus Installed —Illustrations Show Floor Plans of Two Main Floors, Front and Side Elevation and View of Building as It Will Appear When Finished

The Louisville Home Telephone Co., Louisville, Ky., has christened its new building in the western part of the city, "The Shawnee Exchange." The new branch will be completed and placed in service about the first of July.

The Shawnee branch now in course of erection, is a handsome structure with a cut stone front. It is absolutely fireproof, of reinforced concrete, brick and stone.

The Home company recently instituted some very effective advertising bearing upon the importance of its new exchange. Full page advertisements were run in the leading daily newspapers. A view of the building was published and the following facts were given under the caption "Do you know?"

"That the Home Telephone Co. has the largest number of subscribers in Louisville?

New Shawnee Exchange of Louisville Home Telephone Co., As It Will Appear When Completed.

"That the Home Telephone Co. has more than 200 private branch exchange systems in Louisville?

"That the Home Telephone Co. now employs one person to every thirty stations operated?

Front and Side Elevations of New Exchange, from Architect's Drawings.

"That the Home Telephone Co. has 14,900 stations in Louisville, which means one station to every sixteen inhabitants?

"That the Home Telephone Co. handles more than 200,000 local calls in Louisville every day?

"That the Home Telephone Co.'s long-distance lines connect with more than 100,000 telephones in Kentucky and more than 500,000 in this and adjoining states?"

The equipment to be installed in the new exchange consists of a full major relay, cut-off multiple, central energy switchboard, having a three-wire line circuit and a two conductor cord circuit with double lamp supervisory signals, provisions being made for a two-party harmonic ringing service.

The *A* board consists of six sections, eight panel, three position multiple switchboard, having an ultimate capacity for 7,200 multiple jacks, 560 answering jacks and 640 out-going trunk jacks per section. The initial equipment provides for 2,250 multiple jacks, 160 out-going jacks, and 450 answering jacks per section.

The *B* board contains four sections, seven panel, two position multiple switchboard with 60 incoming trunks per section. All incoming trunks will be provided with machine ringing. The first position is to be used for a hospital board and is equipped with 50 out-of-order cords. These cords terminate on the wire chief's desk in the usual apparatus for providing tone test, howler, and testing facilities. Space is provided for an ultimate of 100 of these cords. Five *B* positions with a total of 150 in-coming trunks will be equipped on the present installation.

The power equipment consists of one set (20 cells) of the Electric Storage Battery Co.'s type F7 storage batteries with F 17 glass tanks. This battery will be charged from a mercury arc rectifier outfit consisting of two 30 ampere rectifiers which will be operated by alternating current from a 110 volt commercial circuit.

The ringing current will be supplied by two harmonic converter equipments consisting of 33 1-3 and 50 cycle vibrators in duplicate with necessary transformers, all being mounted in one cabinet.

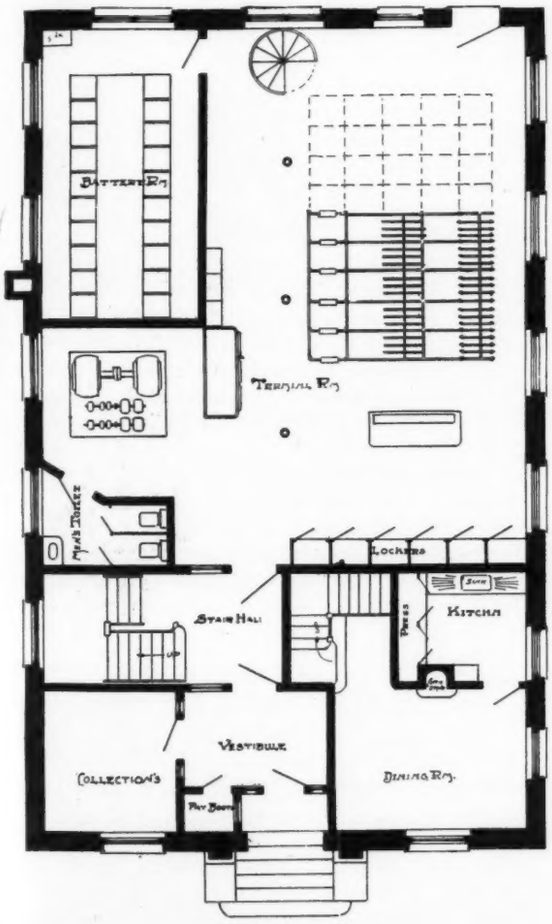
There will also be provided duplicate machines complete with attachments for howler, busy back, and tone test, also with interrupting device for the automatic machine ringing on trunks. One machine will be operated by 110 volts, alternating current and the other by current from the storage battery.

On account of the excessive moisture in the locality of the exchange, special switchboard cable will be used. In addition to the cable core being thoroughly beeswaxed, a layer of manson tape is wrapped spirally and lapped over it.

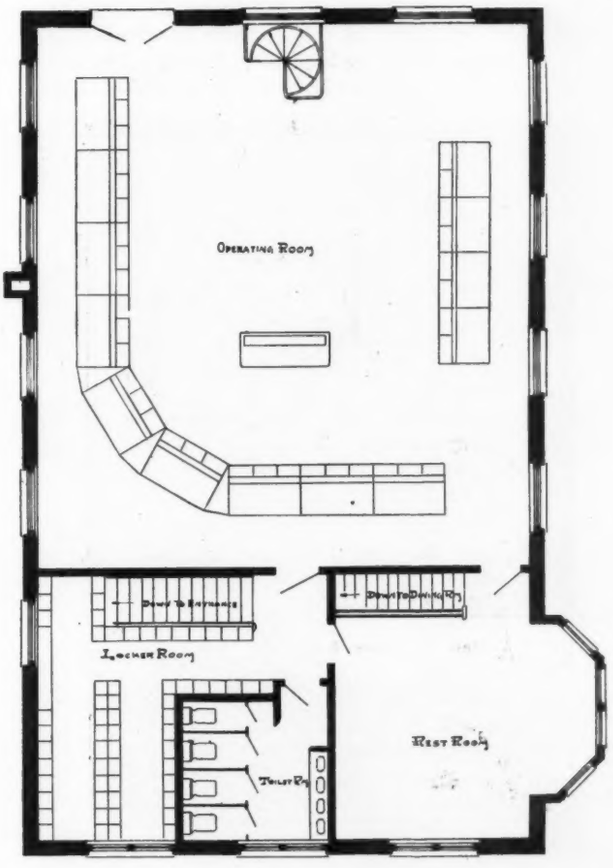
A two-position chief operator's desk will be installed. This desk will be equipped with listening and talking circuits to each position of the *A* and *B* boards, also monitor call circuits to each section of both boards. The object of these connections is to enable the chief operator to signal the monitors and also to enable the monitors to signal and talk to the chief operator without leaving their divisions.

There will be provided one operator's monitor call circuit in each section of the *A* board and in each position of the *B* board. This circuit is so arranged that the operator, by inserting a plug in a jack, will light a pilot lamp located above the multiple space. Associated with this is a cut-in-jack so arranged that the monitor can plug her set in and obtain connection with any line or trunk.

A two-position wire chief's desk carries the usual apparatus for making all necessary tests, also 50 out-of-order cords to the hospital position. Two lamps are associated with each out-



First Floor Plan.



Second Floor Plan.

of-order cord, one to indicate when the cord is up and the other to indicate when the line is clear.

A tone test is provided on all out-of-order cords. It is arranged that when one of the cords is connected to a line and an operator tests that particular line, she will have a clear and distinct tone indicating that the line is out of order.

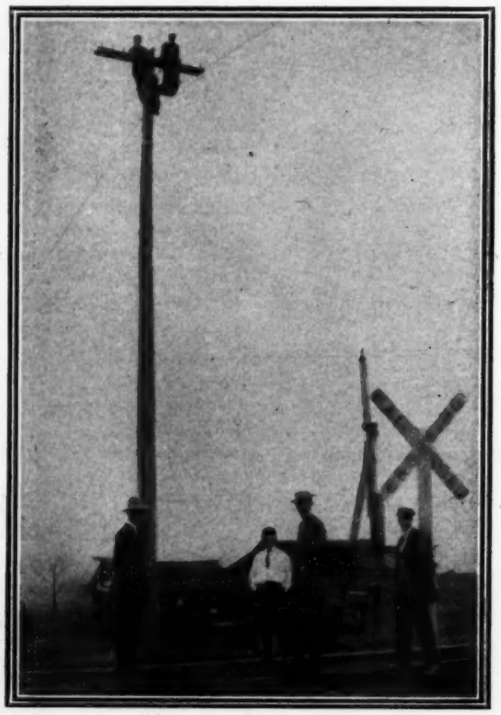
The switchboard equipment is of the Stromberg-Carlson Telephone Mfg. Co.'s manufacture. Holtzer-Cabot and the General Electric Companies' apparatus is used in the power equipment.

The specifications and plans for the new exchange were worked out by Philip S. Pogue, general manager, Vincent E. Furnas, engineer; H. E. Plummer, superintendent of equipment; John A. Harrison, traffic manager, and W. B. Fisher, contract agent, and it will be installed under their supervision.

A Railroad Crossing in Kansas.

Some tall telephone poles are in use at different places as noted at various times in TELEPHONY's columns.

In Spring Hill, Kan., the highest pole is used at a railroad crossing. It is 55 feet in height and carries in addition to the telephone wires and cable John Keller, Vernon Coffin and "Cush" Dever.



A Fifty-Five Foot Pole in a Kansas Town.

The telephone pole raises the telephone wires high enough to readily clear a heavy lead of wires which parallels the railroad right of way.

Oklahoma May Term to Open.

The Oklahoma Corporation Commission docket for May 14, the opening day of its May term, contemplates a hearing on the order requiring telephone and telegraph companies to mark all poles or other structures carrying telephone and telegraph wires.

Other matters set for hearing at that time include a request for the Pioneer Telephone Co. to establish a toll station at Panola, the complaint of the Twin Valley Telephone Co., of Morrison, and the Glencoe Telephone Co., of Glencoe, against the Pioneer, asking for a division of toll charges and a request for physical connections between the Farmers' Mutual Telephone Co., of Weatherford, and the Hydro Telephone Co.

Program of Indianapolis Meeting.

The program for the seventh annual convention of the Indiana Independent Telephone Association has been issued. The meetings are to be held at the Claypool Hotel, Indianapolis, on May 15 and 16—next Wednesday and Thursday. The official arrangement for the two days is as follows:

WEDNESDAY, MAY FIFTEENTH

MORNING SESSION

10:00 a. m.—Registration, eighth floor, Claypool Hotel.
Meeting executive committee, room 740.
Meeting convention committee, room 740.
11:00 a. m.—Call to order.
Roll call.
Address of welcome, Hon. Samuel L. Shank, mayor of Indianapolis.

AFTERNOON SESSION

2:00 p. m.—Meeting of stockholders of the Toll Clearing Co.
President's annual address, N. G. Hunter, Wabash.
Reading minutes of last meeting.
Report of secretary-treasurer.
Reports of districts.
Reports and suggestions upon the Toll Clearing Co., E. V. Hanes, manager, Indianapolis.
Appointment of committees.
Resolutions and amendment.
Credentials and membership.
Auditing.
Inspection exhibits.

THURSDAY, MAY SIXTEENTH

MORNING SESSION

10:00 a. m.—Address, Manford Savage, president National Independent Telephone Ass'n.
General discussion in the interest of Independent telephony in the state of Indiana, open to all.
Unfinished business.
Appeals and references.
Report of committees.

AFTERNOON SESSION

2:00 p. m.—Suggestions for the improvement and betterment of the Indiana Independent Telephone Ass'n.
New business.
Election of officers.
Adjournment.

It is understood that a heavy representation is promised by the manufacturers and dealers for this convention and a large attendance of operators is expected.

Johnstown, Pennsylvania, Company to Extend.

The Johnstown (Pa.) Telephone Co. expects to connect with Portage, Vintondale, Nant-y-Glo, Twin Rocks, Wehrum, and all other towns in the Blacklick region, within sixty days, and eventually with Colver, the new mining town near Ebensburg.

Nant-y-Glo will be made the central distribution point for the new territory, none of which the Johnstown Telephone Co. has been able to reach heretofore. A central exchange may also be located at Vintondale.

Report on Chicago Bell Deferred Several Weeks.

E. W. Bemis, the Chicago expert who is investigating the Chicago (Bell) Telephone Co. on behalf of the city, has reported to the council committee on gas, oil and electric light that he will not be ready to report for several weeks. Mr. Bemis stated that he is waiting for an appraisal of the company's system which is being made by the company.

Florida Association to Meet.

The Florida Telephone Association will hold its annual meeting at the Continental Hotel, at Atlantic Beach, on May 15 and 16.

A Quartet of Men Prominent in the Telephone Field

JOHN CHARLES MURRAY, general sales engineer for the Kellogg Switchboard & Supply Co., of Chicago, though a young man, has covered a wide range of experience in the telephone field. He was born in that city August 12, 1881. Following a common school education in the Chicago schools, he entered the engineering department of the Kellogg company, in 1899, and has remained with that corporation ever since. He was active in the installation of the Cuyahoga Telephone Company's system, at Cleveland; the Keystone, at Philadelphia; the Pittsburgh & Allegheny, at Pittsburgh; and several others of importance throughout the United States. In 1910 Mr. Murray made a complete tour of South America, Central America and the West Indies, closing on the trip a contract for a 10,000 line switchboard at Sao Paulo, Brazil. In the fall of 1910, at the request of the Newfoundland government, he made a trip to that country with reference to the installation of a new telephone system at St. Johns. Mr. Murray has appeared as an expert witness before several state and municipal boards. He is a specialist in the operation of municipal properties.

AUBREY WARDMAN, secretary and general manager of the Whittier Home Telephone & Telegraph Co., Whittier, Cal., and of the Downey Home Telephone Co., of Downey, has been a member of the California Independent Telephone Association since its organization, in 1905, and its secretary since 1907. He was born in Bradford, Ont., September 12, 1877. At the age of ten he became a telegraph messenger; started work as groundman for Toronto street railway at fourteen; at sixteen was lineman for Detroit street railway; from 1896 to 1899 was lineman, foreman or superintendent for the Detroit Home Telephone Co., the Citizens, of Grand Rapids, and the Michigan Bell; later was with the Cuyahoga, of Cleveland, and several street railway and electric light companies. In 1902 he went with the Los Angeles Home, Los Angeles, Cal., and during the next two years constructed the Whittier and Downey systems and that of the Alhambra Home company. He secured control of the first two in 1908 and 1909, since when he has served as secretary and general manager of both. Mr. Wardman is a Mason and a member of the K. of P. and I. O. O. F.

EDWIN D. SCHADE, secretary and general manager of the Johnstown (Pa.) Telephone Co. and the Johnstown-Pittsburgh Long Distance Telephone Co., was born in Greenville, Pa., July 14, 1867, and educated in the public and high schools and the Thiel College, at Greenville. In 1889 he went with the Adams Express Co., being successively driver, clerk, train messenger, office cashier, agent at Ridgeway, Pa., agent at Johnstown and traveling auditor. On September 1, 1900, he resigned to accept the position of general manager of the Johnstown Telephone Co. He immediately set to work rebuilding the plant, 80 per cent. underground, common battery system, with modern fireproof office and exchange building. During 1903 and 1904 he organized the Pittsburgh-Johnstown company and built a line between those cities —the connecting link east and west. Was president of the Western Pennsylvania Independent Telephone Association in 1910 and director of National Independent association 1911 and 1912. Mr. Schade is a life member of the B. P. O. E., Johnstown Lodge 175, of which he is past exalted ruler.

ELVORD G. CHAMBERLAIN, president of the Southern Exchange Co., of New York City, has been engaged in furnishing telephone poles, cross arms, supplies, etc., to the telephone trade since 1900. He was born in Merrimack, N. H., March 26, 1861, and educated in the McGaw Normal Institute, at Reeds Ferry, N. H. His business experience is briefly summed up as follows: Auditor of passenger receipts for the Boston & Lawrence Railroad, at Boston, for four years; auditor of passenger receipts for the Concord & Montreal Railroad, at Concord, N. H., for seven years; cashier in a broker's office in New York City for two years; vice-president and sales manager for the Standard Pole & Tie Co., New York, for four years; and president of the Southern Exchange Co. since 1904. Mr. Chamberlain is a member of the American Street Railway Engineering Association, of the New Hampshire Society, New York City, and of the Montclair Club, Montclair, N. J. While the Southern Exchange Co., of which he is president, is well known as specializing on telephone material, it also reaches out widely in the general electric field.

What Is the Answer?

The Indianapolis Merger — The Postal Telegraph Situation — Some Inconsistencies

By J. C. Kelsey

The Indianapolis Telephone Co. is called a Morgan property. There has been no concealment of its anxiety to merge with the Central Union Telephone Co., a Bell concern.

It is history now that the Board of Public Works rejected the terms of the merger. It is also history that the Indianapolis Telephone Co. has been ordered to spend $400,000 for needed improvements.

This date has been postponed from time to time. What is the reason? What is the answer?

The Indiana State Convention is entitled to know. It should request the information or make demands which will protect its members.

So far it seems to be a fact that no so-called Morgan property will receive a dollar of new money—that these plants have been placed on a self-perpetuating basis, in other words, to work out their salvation from earnings.

It is easily seen that such a policy will produce stagnation, and allow the competing Bell properties to pass the Independent companies, and eventually effect their ruin.

This seems to me the real condition at Indianapolis.

The property, at the present rates, can not perpetuate itself. Before a new dollar will be put into it, the property will be allowed to rot. That is my belief. In fact, the city has been threatened by this very thing.

And the most apparent thing now existent seems to be the inability of the Bell and the Indianapolis managements to agree. It looks as if each were suspicious of the other.

No one can say that the Bell controls the Indianapolis Telephone Co. It is a cinch that it does not act like it.

Control of so-called Bell properties is ever placed in a mysterious spot. No man outside of the Bell president and his directors ever know.

Today the talk of merger has been renewed. Have the competing Independent companies of Indiana been taken into account? If they have not, the deal will fall though again.

The civic bodies are trying to get together again. A committee of fifteen men of representative standing voted on the unification plan as follows:

For	7
Against	6
Neutral	2

Surely this can not be called a striking endorsement for unification!

Unification failed before, because the Indianapolis Telephone Co. apparently tried to gum-shoe a merger through. Such a method these days seems so ridiculous that no comment is necessary.

Indiana has more successful Independent telephone plants than almost any other state. Cut off these exchanges arbitrarily from Indianapolis connection, and not a week will elapse before the business men of that city will be on their knees asking for that service.

It seems impossible to contemplate the blindness of the management which has this merger in hand. Their actions almost indicate a revival of comic opera, El Capitan, etc.

They do not realize that the germ of Independent telephone competition has never died. And when this spirit awakens again, it will awaken with experience. There will be none of the mistakes of the past, which have been so costly.

It seems that some people will not learn from experience. That identifies the Indianapolis merger management to the letter.

No one believes for a moment in carrying on the dual telephone joke as it exists in Indianapolis. It would be absurd to put more money into it. It would be absurd to buy that new switchboard. It would be waste and extravagance!

The people of Indianapolis should know, even if the present contemplated $400,000 improvement is made, if that company expects to go on and develop the city in the future as it should, or if it will have to be forced to do so as it is at present? As it looks now, no new money will ever be voluntarily put up for improvements.

Unless that company can produce the $400,000 from its own earnings, there is no hope of getting it elsewhere.

As an indication of the plight of the Indianapolis Telephone Co., and a proof of its inability to get new money, we have a picture of this company buying a second hand switchboard for Lebanon.

I have had an idea about the unification plan. I have thought that it meant a new and improved condition. I also thought that the public, in view of this condition, was entitled to a new property all around.

Unification usually means increase in rates, too. But who can consistently demand higher rates when doubtful improvements are made?

If the admission of the Indianapolis Telephone Co. can be accepted as the truth, I have a very decided feeling that unification in Lebanon will travel a rocky road.

Lebanon already has a miserably low rate. And the rates should be higher. But the citizens of Lebanon should stoutly resist any increase in rates based upon second-hand goods bought from the Bell factory.

That second-hand purchase for Lebanon should convince the most sanguine individual in Indianapolis, that the Indianapolis Telephone Co. is not playing fair when it asks for postponement of the expenditure of that money. It at least should be compelled to give a guarantee of good faith.

It is time to call the turn and stop the deal. Simply command the board of public works to issue an order for those improvements—that is, if the people rule. Or demand a merger, with the rights of the Independent telephone companies of Indiana fully protected.

Somehow, the Bell company has little or no respect for the words "heirs and assigns." It gives them no heed at all.

If the merger will not consider the rights of Indianapolis, and those of the connecting companies of Indiana—what is the answer?

A municipal telephone system for Indianapolis!

San Francisco and Seattle have already carried out this idea. Municipal service is to be a fact there.

Personally, I dislike to see the breaking down of private ownership, but it won't be hard to find who is to blame for it.

Indianapolis is a city, particularly susceptible to the municipal idea. It is an unusual city. It lies within an unusual

state. It is the last place in the world where the square deal can be ignored!

The Bell concern in Indianapolis deserves some consideration. It is well-managed and gives excellent service. Its lessons of original ruin have not been and will not be forgotten. It will have a great future if it can co-operate with the outlying telephone properties.

Why the engineers of this merger insist upon ignoring the very elements which will not only contribute to its consumation, but to its future success, is beyond my comprehension.

Ordinary reasoning power should prevail.

I can't understand why there is such a difference between Ohio and Indiana. Ohio has more vexing telephone problems than Indiana, yet there is harmony there. Has the Ohio crowd more brains?

In Indiana it seems to be but discord and suspicion. I think that is the real reason of the merger failure.

While not a prophet, I predict that Indiana will be another telephone battle-ground, unless there is a radical change in the behavior of the management.

I don't believe this Indianapolis property is any more Morgan's than yours or mine. I don't think it is really fair to take J. P. Morgan's name in vain with this utterly un-Morgan-like condition.

Do you suppose that the man who replaced the Campanile and who gave a new sanitarium to the sick of Paris does business that way? I don't believe it!

I am glad, too, that J. P. Morgan cancelled his Titanic reservation. He deserves a long life.

But the joke at Indianapolis is not his. It should be put in its proper light at the Indiana convention. This association has work ahead.

Personally, I feel that unification is the thing at Indianapolis. Both properties have common ends. But it will take better judgment to run such a delicate combination than is exhibited now.

If you do not play fair, look out for municipal ownership, Mr. Management!

While I am in a more or less inquisitive mood, I want to comment upon the attitude of the Postal Telegraph Cable Co. toward Independent telephone interests.

I have come to the distinct conclusion that the Postal company has taken front rank as a four-flusher, as regards its telephone plans. I have ceased that diligent care which always led me to send my messages from a Postal office. In other words, the Western Union, with its 30,000 stations, gets my business in preference to the one which has but 5,000.

The Postal Telegraph Co. is getting double-crossed every day of its commercial life. It sleeps on, however. While it may feel no diminition of gross receipts now, it will feel it later, and feel it hard, too. If the company means business, it is certainly taking its good time.

One dislikes to destroy one of his gods in anger, but that is my position with the Postal.

I have a friend in Kosciusko, Miss., by the name of Sidney Whyte. He is an Independent telephone operator and has nicely survived the rude shafts of the Cumberland Bell.

You know what that means. Giving Independent telephone service in Cumberland territory is war—war to the knife! You remember Sherman's definition of war.

Sidney Whyte made a contract with the Postal Telegraph Co. to string some wires on its poles from his town to Starkville, Miss.

The Postal company practically made the proposal for this company to come to its assistance. You know the big noise made about the time of the threatened government suit!

After Mr. Whyte strung his wires on the Postal poles, he was informed that that company had a previous contract with the Cumberland Bell. Today, the Bell company is placing copper wires on the Postal poles, and in a few weeks the investment made by Mr. Whyte will be a loss.

Mr. Whyte asks me "if the Postal is the biggest bunch of liars, or the biggest bunch of fools." Really, I can't make answer! Which do you say? It means that the Western Union will get the business.

I feel somewhat in sympathy with my southern friend. I am asking myself if the Postal bunch are foolish. I hope not!

But who will pay this man for his trouble—his investment loss? What is the answer?

It strikes me that a grievous wrong has been done to this sturdy telephone operator.

I know dozens of others who have written the officials of the Postal and have never received even a reply. It is really hard to understand. Is the Postal having fun with the Independents? Is it laughing in its sleeve about them? Or does it suffer from a delay? It takes time to do things, I know.

If the Postal Telegraph Co. means business, we are sorry to have shown our temper or impatience. But so far it has done far less for Independent telephony than the Bell interests themselves.

You will all have to admit that the Bell company is slowly improving as regards its attitude toward the successful Independent companies which ran it out of business.

I know that a great deal has been expected from the Postal company. Possibly we expect too much! But it will have to be doing something more before I will hunt all over a strange town for a Postal office. And I am not alone in this feeling, either.

TELEPHONY has given its columns to the aid of this company, and we have all gone out of our way to boost, but so far as I am concerned, as the raven said, "Never more!"

Here is the position of the Independent telephone interests. They must know their friends! And Independent manufacturers who are crowded out by Bell purchase, have a right to create new business in the same place by any hook or crook.

A merger which leaves a telephone property in the open field of purchase is justifiable and fair and American. No one has any right to interfere.

But the field must be wide open, and each and every institution given a chance to work out its salvation fairly.

The incompetent soon fall by the wayside. No one seriously considers them.

Opportunities must not be cut off arbitrarily if peace is expected!

The inconceivable thing about the Indianapolis merger affair is that seemingly no one has learned anything from experience.

The curious part of the Postal matter is that they do not seem to realize that their position commercially is the most critical of all.

And the worst form of mental aberration is that of the Lebanon type, which thrusts second-hand goods upon the citizens of a town and expects them to pay in return for a new and modern one!

I will cheerfuly help the citizens of Lebanon defeat the demand for higher charges.

The world does move, but most of the people in it only move when they are forced to do so. Even the Titanic orchestra is said to have played at the point of a pistol!

It seems that publicity is the only pistol which will force some institutions to be fair. And only by being fair do they make real progress!

Let this be a thought for the Indianapolis Telephone Co. and the Postal Telegraph Co.

MORAL:—Experience should teach!

Bell Files Exhibits in Albany Case.

The New York Telephone Co. has filed some nineteen exhibits with the Public Service Commission in the case of the complaint of the Albany Chamber of Commerce against the telephone rates charged in the city of Albany.

These exhibits purport to give the entire status of the telephone company's business within the city and vicinity, including revenue and expenses and an inventory and appraisal of property. The gross revenue is given as $459,151.97 for the year 1911, and the expenses as $376,158.78 for the same period, leaving $82,993.19 as net profit. The inventory shows property to the amount of $2,136,120.00, which includes $496,175 as the cost of the Albany Home and Rensselaer Telephone properties, also $50,000 working capital and $150,000 cost of establishing the business.

The expense account is made up as follows:

General	$ 6,505.68
Commercial	69,467.99
Traffic	91,078.91
Plant	87,068.34
Depreciation	80,010.00
Rights, privileges, etc.	22,802.05
Insurance	1,467.81
Taxes	17,758.00
Total	$376,158.78

The detail supporting these figures shows something over $40,000 for supervision. No detail is shown for the "rights, privileges and use of property," but this item undoubtedly includes the 4½ per cent. paid to the parent company and which has been the occasion of much discussion in the telephone rate cases in other states.

Various bases are used for apportioning the overhead expenses to the Albany area. General expense is apportioned on the basis of relative revenue for division purposes, and the Albany quota is then found on a basis of comparative pay roll of division to city. In other cases the relative number of subscribers or the relative number of accounts is used as a basis. The commission's accountants are now engaged in sifting the figures.

New York Hearing Postal vs. Bell.

The New York Public Service Commission has ordered a public hearing at Albany, May 20, upon the complaint of the Postal Telegraph-Cable Co. against the New York Telephone Co. alleging that the telephone company is by illegal discrimination diverting to the Western Union telegrams which are intended for the Postal.

The order recites that it appears to be the practice of the telephone company to connect subscribers and others with the Western Union upon the subscriber giving the number assigned to the Western Union, or the name "Western Union," or upon using simply the word "Telegram"; and that there appears to be sufficient reason from the facts informally submitted to the commission to inquire and investigate as to whether the use of the word "Telegram" in calling for the Western Union Telegraph Co. is not giving an undue or unreasonable preference to the Western Union, and if the differing methods of calls for the two telegraph companies does not occasion confusion and annoyance to those desiring to communicate with the Postal.

A Combination Telephone Post.

The annual report of the fire and police alarm systems of the city of Milwaukee for the year 1911 has just been issued. It contains some interesting data in regard to police and municipal telephones and the fire alarm telegraph.

The police telephone service is maintained and operated by the city. The fire alarm department is not equipped with telephone service and during the past year telephone service was requested of the department for the use of health inspectors, sewer inspectors, ward foremen, firemen and city hall employes in general, to be connected with a switchboard in the city hall, thus giving the various employes direct department connection.

The Milwaukee Way.

In order to meet this demand, a combination post was designed which would furnish three separate and distinct branches of service, viz., one section for municipal telephone service, another section for the police private telephone service and a third for the fire alarm telegraph.

In addition to this triple service, a red light was placed on each combination post which would burn all night and thus show the location of the fire alarm box. It is also intended to serve as a signal for calling the policemen on the beat.

The operators in the central police station control the lights on the various boxes and can cut them on and off at will. The flashing of a light indicates to the patrolman in that section that he is wanted by the station operator whom someone has called for aid. As a patrolman has from one to three lights on his beat, he may report to any one box without attracting attention.

A neighboring policeman may answer the call, should he see a light flash on an adjoining beat. As long as a patrolman sees his lights burning, he knows that no one has put his means of being signaled out of order.

The fire alarm and police boxes have heretofore been separate and it was recommended that the movements be taken from these boxes and placed in the combination post. In this manner the police department has added to its telephone and telegraph service, a large number of boxes and others will be added from time to time.

The illustration shows one of the combination posts. The open door at the left indicates the telephone for the use of firemen and various other city department employes, while on the right side of the post, the police private telephone system apparatus is located. The fire alarm box being the one used by the public is placed on the front of the post. This type of combination box indicates very readily the location of the fire alarm boxes and also provides a quick means of obtaining aid from the police in case of emergency.

Sparks from the Troubleman's Department

The Telephone Monologist Concludes.

By James Akins Seals.

A bunch of convivial fellows returning from a good time stepped up to a telephone in one of the rooms in the hotel and called up the P. B. X. operator to order some drinks, as all of them were still a little dry, though wet. He said: "Hello, operator?" "Yes." "Here's an order for some drinks. Send me one lemon seltzer. Got that down?" "Yes." "One straight whiskey. Got that down?" "Yes." "One gin fizz, and a dry martini. Got that down?" "Yes." "One suisesse. Got that down?" "Yes." "Two quarts of champagne. Got that down?" "Yes." "Well, now how do you feel?"

Gee, I bet she went to the ground and was short circuited by the shock.

A small telephone company went into the hands of a receiver and after the new man got on to the job one of the telephone linemen who was inspecting the exchanges called up and said: "Hello, are you the receiver?" "Yes." "Why, the batteries out here have to be charged. What shall I do about it?" He replied, "Buy some right away; don't charge them."

Now wouldn't that snap a guy wire!

But, later in the month, this same lineman was going over a pole line in a different section of the country and he noticed the ground badly broken and a log projecting from it at a bad bend in the road, so he called up the receiver to report it, like this: "Hello, are you the receiver?" "Yes." "I'm your lineman. Say, I noticed a dead man coming out of the ground out here near the railroad station, what am I to do about it?" The receiver exclaimed: "For heaven's sake call up the morgue and send for an undertaker. Don't bother me with it!"

Say, don't kill it yet, leave it for me.

While waiting in Wellington, Mo., one afternoon for a street car, I stepped into a stationery store to look over some periodicals. As I did so the proprietress stepped up to the telephone and dropped a nickel in the box. Apparently the line was busy. The operator refunded her coin and, as she did, three or four other nickels dropped out.

"Gee," said a rube who was standing near by, "that's easy money, guess I'll play that cigar machine myself. Never had any luck on a gambling machine in my life."

So, up steps the rube to the telephone and drops the nickel into the slot, placing the receiver to his ear. The operator came in on the line and said, "Number? Number?" And he replied, "Number nothin', I'm playing this here gamblin' machine to make a piece of money out of it."

The operator said, "This is a telephone."

She did not see the joke and by mistake deposited his nickel in the box.

If a live wire got sore at a pot head and gave him a shock would the cable box? Gee, but the wires would get cross.

While showing several farmers through a manual exchange one afternoon, I said, "Hiram, this is a common return board." He replied, "When did it go?"

I said, "Those little holes you see there are jacks." "By heck," he says, "I thought they grew only on the farm."

I said, "These little brass knobs on these cords are plugs." "Oh, gosh," he said, "I thought they were only hitched to milk wagons in the cities."

I said, "These little lights you see flashing right here are lamp signals." He said, "Why, I thought those things were fire flies like I see in the woods at night. By golly that is the best talking machine I've seen yet."

I said, "Over here in this room is the plant department." Old Cy said, "Well, this don't look like a green house to me, looks more like a museum with all those snakes and worms over there in a cage."

I said, "That's a distributing frame and contains the wires and conductors." "Conductors? I know they have such a thing on the plug train in my vicinity, never knew they had them in a telephone plant."

"Sure an operator is a belle and she rings quite often," said the manager carelessly.

A lady from Mora, New Mexico, was in the city recently, and was overwhelmed with the array of Easter hats in the shop windows. A milliner was visited and a hat ordered, but the milliner, in the rush of business, did not finish it until after her customer had departed for her home. It was decided that the hat should be sent by express when it was finished, but that it would not be accepted unless it was delivered in time for Easter Sunday. About 5:30 o'clock on Good Friday a telephone conversation was overheard as follows:

Mrs. Trimmer—Is this the W. F. Express Co.?

Agent—Yes, madam; what can I do for you?

Mrs. Trimmer—I have a package which must go out on the 6 o'clock train to Mora. Will you please send the wagon to Mrs. Trimmer's tonight, sure?

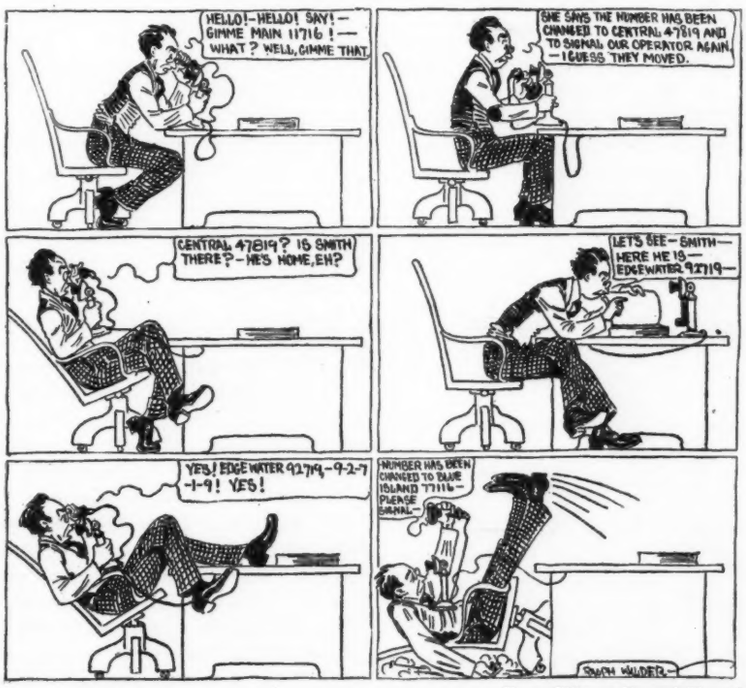
Agent—I will have the wagon stop the first thing in the morning.

Mrs. Trimmer—But the package must go to Mora tonight at 6 o'clock, and it is now 5:30.

Agent—No, this isn't the asylum, that is over the hill. Tomorrow, tonight, 6 o'clock, now 5:30. Are you crazy?

Mrs. Trimmer (about to cry)—Mrs. Jones at Mora, New Mexico, ordered a hat and it must be sent to Mora tonight or she will not be able to wear it Easter. Can't I take it to the train myself?

MAY TELEPHONE TROUBLES


HELLO!-HELLO! SAY!-GIMME MAIN 11716!-WHAT? WELL, GIMME THAT.
SHE SAYS THE NUMBER HAS BEEN CHANGED TO CENTRAL 47819 AND TO SIGNAL OUR OPERATOR AGAIN.-I GUESS THEY MOVED.
CENTRAL 47819? IS SMITH THERE?-HE'S HOME, EH?
LET'S SEE-SMITH-HERE HE IS-EDGEWATER 92719-
YES! EDGEWATER 92719-9-2-7-1-9! YES!
NUMBER HAS BEEN CHANGED TO BLUE ISLAND 77116-PLEASE SIGNAL-
SMITH WALDER

From Chicago Record-Herald.

Agent—Oh, I see. (Aside to driver)—Can you get a package at Mrs. Trimmer's to Mora and rush out tonight? (Driver)—Get the package tomorrow and rush out tonight? Sure; this is the first time I ever did get away on time.

Agent (to Mrs. Trimmer)—I'll come and get it myself, Mrs. Trimmer.—Mountain States Monitor.

Do you see that man?

He is a telephone snipe.

Why is he called a telephone snipe?

Because he habitually uses some other man's telephone in preference to having a telephone of his own.

No, he pays nothing for the privilege. Sometimes he says: "Thank you."

Besides using your telephone, he contrives to get you in bad with the telephone girl. He wants to know what's the matter with the ding-danged service, and he frequently yells like a crazy loon on a quiet summer night.

Because the privilege doesn't cost him anything he abuses it.

And there seems to be no way of abating him.

Don't forget his title.

The telephone snipe.—W. R. Rose, in Cleveland Plain Dealer.

She—In a way, getting married is like using the telephone.

He—How so?

She—One doesn't always get the party one wants.

Queries on Theory and Practice

Effect of Temperature on Resistance of Wire.

What allowance should be made for variations in temperature in the measurement of the resistance of both copper and iron line wire? Is it proportional to the coefficient of expansion?

The electrical resistance of metals increases with their temperature. Within the practical limits, the increase is usually assumed to be proportional to the temperature rise. Dr. Matthiessen, while experimenting with copper conductors, derived the following formula for the change of resistance with temperature in copper wire:

$$R = R_0 (1 + .00387\ t + .0000059\ t^2).$$

Later experiments have shown that for all practical engineering purposes, all terms below the second may be dropped and that the equation for temperature changes in copper wire may be written:

$R_t = R_0 (1 + .0042t)$ for t in degrees Centigrade, or

$R_t = R_0 (1 + .0023t)$ for t in degrees Fahrenheit

where R_0 = resistance at 0° C. and R_t = resistance at any temperature $t°$.

The general equation for any conductor is usually written: $R_t = R_0 (1 + at)$, where a is called the temperature coefficient of the conductor. These coefficients vary considerably with the purity of metals.

If the resistance R_0 is not known but the resistance R_1 at a temperature t_1 is known, the resistance R_2 at a temperature t_2 may be found from the formula $R_2 = \dfrac{R_1 (1 + at_2)}{(1 + at_1)}$

The value of the temperature coefficient a taken from any table must be for Fahrenheit or Centigrade scales, according to which is used in expressing t_1 and t_2.

The temperature coefficient for copper is usually taken as .0042 for each degree Centigrade and .0023 for each degree Fahrenheit variation in temperature. The resistance at 0° C or 32° F being assumed as 1. For iron wire, the temperature coefficient is .0050 per degree Centigrade and .0028 per degree Fahrenheit.

The values of the temperature coefficients were determined from a consideration of the relation of the length and cross sectional area which vary with the temperature. The resistance of a conductor increases or decreases in direct proportion to an increase or decrease in length. The resistance varies inversely with a change in cross sectional area. That is as the sectional area increases, the resistance decreases and conversely the resistance increases as the cross sectional area is decreased.

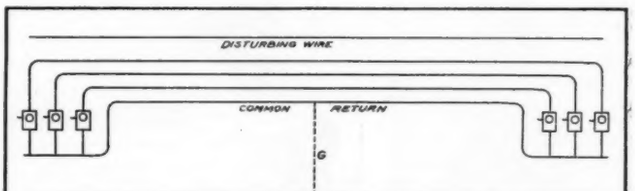
The mean coefficient of linear expansion for hard drawn copper wire is .00000950 for each degree Fahrenheit and .0000171 for each degree Centigrade change in temperature. The corresponding coefficients for iron wire are .00000673 and .00012.

Wise For Common Return Circuit.

I want to put in a common return circuit for about fifty lines of No. 14 wire. What size wire should be used for the common return?

Must it be grounded, if so where?

The use of No. 10 B & S gage hard drawn copper wire will give you about the right conditions. You have not stated the length of the lines which are to be returned on



Conditions for a Noisy Common Return System.

the one common wire, but it is assumed that they are all in town and will not average over a quarter of a mile each.

There is no size of common return which will give a quiet exchange, free from cross talk. The latter will always occur to some extent until metallic circuits are installed. The size of wire given above will reduce the cross talk as much as it can be reduced by mere resistance alone. The size of the common return will not affect the noise which comes from electric light or power circuits or other disturbing elements outside the telephone system.

It is not necessary to ground the common return. In fact, it is better for certain reasons to keep it well insulated. The relations are shown in the illustration. Six telephones are shown in three connections for conversation, all returning on the same return wire.

If the line wires are grouped close to the common return wire, a disturbing wire will induce charges on the latter as well as on the lines, and the charge on the common will tend to neutralize those on the lines. This will thus make the system more quiet. But if the common wire is grounded as indicated by the dotted line, G, little or no charge will be held on it, for it will act as a part of the ground. Hence all the charges induced on the line wires by the disturbing power lead will be forced to seek the earth through the telephones, thus producing noise on the system and making distinct speech transmission impossible.

Some argue that, since it is hard to keep the common return wire free from grounds, it is better to ground it at the office so as to have it localized. This may be done without harm if there are no power circuits to cause strong induction.

Practical Subjects—Letters and Discussions

What's the Answer?

At Brownsville, Ore., the Pioneer Mutual Telephone Co. operates a magneto exchange of about forty or more lines, about ten of which are grounded circuits. These were grounded on a galvanized iron pipe driven about seven feet into the earth, and about sixty feet from a mill race of running water which kept the ground moist to within two or three feet of the top of the pipe. It was placed by the side of the office pole at the time the pole was set and driven about three feet deeper than the pole hole. A No. 6 copper wire was stapled to the pole up to the terminal, where all grounded circuits were connected to it, and the other end was soldered to the pipe. The pole was treated heavily with creosote or carbolineum and was set about five and a half feet deep.

Everything worked well until the past winter or about six months after the work was done, when it was noticed that when the operator rang on a certain grounded line, the drops on several of the other lines would be thrown, that is the grounded ones, sometimes one, two, or perhaps six or eight of them at once.

This continued for some time before the trouble was reported, but I was not called to clear it until the latter part of April. I tested for crosses in the switchboard cable, arresters, line cable, etc., and found when the fuses were removed from the affected lines, that the trouble was cleared. It was impossible for the lines to cross outside as they ran in different directions and all the jumper wires were of new material and perfectly good.

I located and cleared the trouble but would like to see the case discussed as to the probable cause in the "Practical Subjects" department of TELEPHONY by some of our friends. I will later tell what I did to clear the trouble and my opinion as to the cause, providing no one else answers the problem.

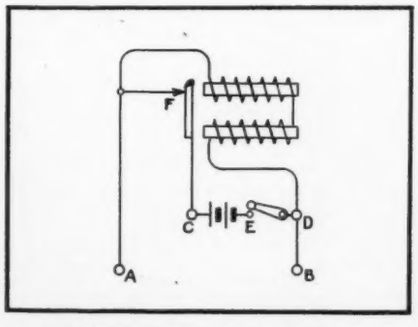
The line seeming to cause the cross ringing was about a quarter of a mile long and had four instruments of the bridging type with 1,000 ohm ringers connected to it. The drops had 500 ohm coils.

Corvallis, Wash. W. G. Cumming.

A Wireless Cable Tester.

I am enclosing sketch showing connections for making a wireless cable tester, which I have used to good advantage.

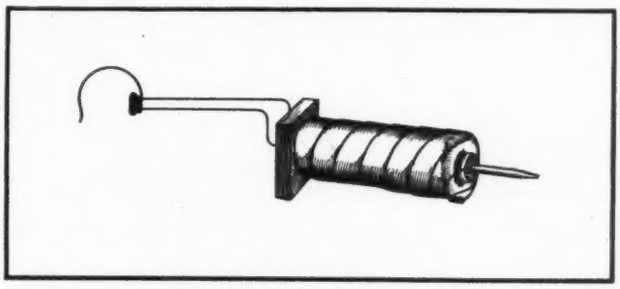
I had trouble in a 50-pr. cable, about half the pairs showing as grounded, and I could not get results by using one pair in testing.



The Tone Producing Equipment.

I grouped 20 pairs of the wires together and connected them to one side of the apparatus on the board and grounded the other. In this way I obtained sufficient tone to make my location. The cable was laid in the ground without the use of conduit, and the lines were grounded at the switchboard, each pair forming two separate lines. By digging to the cable in the middle of the run I located the trouble in the half away from the office. Again digging in the middle of this half, I located the trouble in a joint which had a pin hole in it.

This device also located shorts in inside wiring. By passing the coil along over the wires under test, the tone stops after the cross or short is passed.



Detector Coil for Wireless Cable Tester.

The detector coil is made by using the secondary of an induction coil. One head of the coil is knocked off and the coil wrapped with two layers of friction tape. A sixpenny nail, without a head and sharpened to a point, is driven into the end. This point is used in testing on twisted paired, inside or outside wires.

The tone for testing is obtained from a vibrating bell or buzzer mounted on the board. The arrangement is shown in the illustration. *C* and *D* are binding posts on bell and *A* and *B* are auxiliary binding posts to which connection is made for testing. *E* is the switch for closing the circuit to produce the tone for sending out on the line.

Salem, Mo. Chas. B. Jeffries.

The Telephone and the Police Department.

Chief of Police H. C. Baker, Racine, Wis., relates the following happenings which testify to the utility of the telephone in every day police work:

I wish to relate an incident that comes to my mind in which our Flash-lite system played a prominent part. A complaint came to the desk sergeant about 11 p. m. that a store had been burglarized and a large amount of cigars, cigarettes, tobacco, etc., stolen. The Flash-lite was thrown on and a patrolman at the C. & N. W. Ry. depot answered at once. He was told of the burglary and reported that he had seen three men enter a box car on a moving freight train south bound.

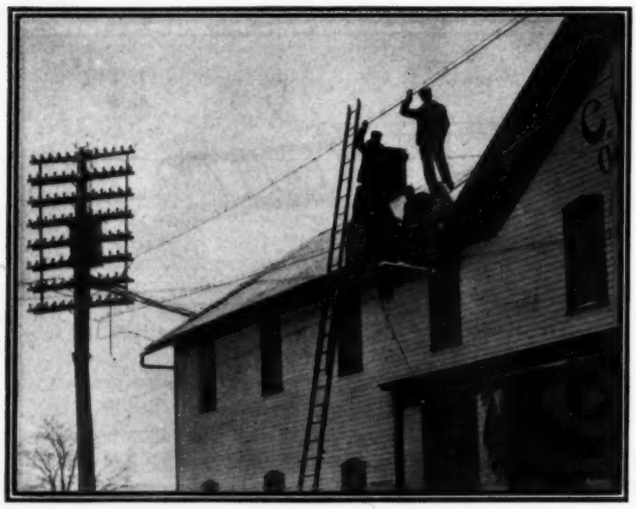
The Flash-lite was then thrown on the south side of the city. Two patrolmen answered and were told to go through this freight train which stops at Racine Junction, where the C. & N. W. crosses the C. M. & St. P. Ry. Within twenty minutes these men reported that they had captured the burglars with the stolen goods on their persons.

Another incident which I recall: About 2 a. m. a telephone call came in that a man was trying to break in the rear entrance of a neighbor's residence and that a policeman was wanted at once. The Flash-lite was turned on in this locality, a patrolman answered at once and was told the circumstances. He went to this house through the back yard of an adjoining house, got his man, took him to a nearby call box, sent for the automobile patrol and in less than ten minutes from the time we received the call, the man was locked up in a cell. Soon after the party who had called

and given us the information, called and wanted to know why in —— we didn't send a policeman. When informed that we had the man already locked up, he was much surprised and was not fully convinced until the next day.

Cable Splicing in the "Upper Pen."

The state of Michigan, it is well known, is divided into two parts, both of which are peninsulas. The northern part is known to residents of the state and of neighboring



A Husky Crew "Up in the Air."

states, as the Upper Peninsula and is commonly referred to as the "Upper Pen."

The photograph which is reproduced was sent to TELEPHONY by Ernest Rahn, manager of the Manistique Telephone Co. According to Mr. Rahn, he and his men are busy in the "Upper Pen." splicing cables. Evidently the "Upper Pen." refers to the location of the cable box and also to Upper Peninsula, where Manistique is located.

Annealed Copper Standard, Value Recommended by Bureau of Standards.

A report on copper wire tables has been made by the Bureau of Standards, Department of Commerce and Labor, Washington, D. C.

It states that copper wire tables are based on certain standard or assumed values for the conductivity or resistivity and the temperature coefficient of resistance of copper. When accuracy is important, the electrical engineer does not consult the wire table, but makes actual measurements of the resistivity of samples of the copper used. Frequently the resulting conductivity is expressed in per cent. of the standard value assumed for conductivity. Per cent. conductivity is meaningless without a knowledge of the standard value assumed, unless the same standard value is in use everywhere. But the same standard value is not in use everywhere, and confusion in the expression of per cent. conductivity has accordingly resulted.

The temperature coefficient of resistance is usually assumed as some fixed standard value, but the same standard value is not in use everywhere, and results reduced from one temperature to another have accordingly been uncertain when the temperature coefficient assumed was not stated. These conditions led the American Institute of Electrical Engineers to request the Bureau of Standards to make an investigation of the subject. This has been done and has resulted in the establishment of standard values based on measurements of a large number of representative samples of commercial copper—values which in certain respects are more satisfactory than any preceding standard values.

In the investigation it was discovered that the temperature coefficient is proportional to the conductivity. This new law has been corroborated by the Reichsanstalt, of Germany, and is of considerable importance in electrical measurements. It was also discovered that bending and winding a wire do not change the temperature coefficient, and consequently the internal temperature of electrical machinery may be calculated from resistance measurements with greater confidence than heretofore.

A proposal from Germany of a standard conductivity based upon this investigation has been accepted, and will probably soon be adopted all over the world. This new standard is a slightly lower conductivity than the former American value and the average of the experimental values published by the Bureau of Standards, but can be considered as substantially representative of average commercial copper.

This report gives a history of wire gages, showing that the trend of practice is toward expressing diameters directly in decimal fractions of an inch. The report contains 15 tables, including complete reference and working tables for annealed copper, both in English and metric units. Tables for copper cables and for hard drawn alumium wire are also given. The tables have been adopted as the official wire tables of the American Institute of Electric Engineers.

Scheme for Increasing of Toll Business.

The office of the Cumberland Telephone & Telegraph Co. in Louisville, Ky., has instituted a plan of boosting its toll business through the co-operation of merchant subscribers. The plan is an interesting one to any business concern and is readily adaptable to the long distance service of any telephone company.

A number of the business men have agreed to pay toll charges upon telephone orders which amount to certain specified sums, the amount depending upon the extent to which the merchant wishes to extend this business producing power. The telephone company lists the names of such subscribers as are willing to pay the charges, in a special list in its directory, thus affording advertising for the retailer.

If Brown, Jones & Co., haberdashers, desire business from out in the state, it specifies in the classified list that it is willing to pay for all long distance calls which result in orders amounting to $5 or more. As the list appears in all Cumberland directories throughout the state, the merchant is not long in gaining results.

A couple of hundred firms are listed in this special classification. The limits placed by the merchants range from the "no limit" class up to $100, inasmuch as some concerns are willing to stand the toll charges on any orders they may receive via the telephone while others demand that a good sized order be placed.

The list of merchants patronizing the system includes department stores, hardware retailers, wholesale and retail clothing merchants, dealers in surgical instruments, florists, confectioners, etc.

Adjusting Ringers.

In the article in last week's issue on page 563 on the subject of adjusting ringers, two descriptive subheads were omitted, due to typographical errors. In the middle of the second column above the paragraph beginning "Temporarily set the gongs, etc.," the heading "Biased Bells" was omitted, as was the heading "Direct Current Bells" over the second paragraph from the bottom of the column beginning with the same words. In a number of copies, the explanatory caption for the illustration near the top of the same column was omitted. The caption is "Buzzer Formed by Turning Back Clapper Rod."

Cuyahoga Company Issues Statement for 1911 Year

Cleveland Company Shows Gain in Earnings and Falling Off in Expenses — Gross Was $917,486, Expenses $486,148 (or 53 Per Cent.), Net $431,338 — Net Surplus, After Expenses, Interest and Dividends, $24,498 — Complete Statement and Balance Sheet

The Cuyahoga Telephone Co., of Cleveland, has made public its statement for the year ended December 31, 1911. The figures show an increase in gross of $30,324. Expenses increased but $2,854, leaving a gain in net of $27,470. The plant is given at a value of over six millions.

Total gross income for the year was $917,486; total expenses were $486,148. The proportion of expenses to gross was, therefore, 53 per cent. Net earnings were $431,338; appropriation for depreciation and reserves, $273,226; interest and dividends, $248,727. Surplus earnings, after all expenses, interest and dividends on preferred stock, were $24,498.

The balance sheet for the year ended December 31, 1911, was as follows:

BALANCE SHEET.
As of December 31st, 1911.

RESOURCES.

Property and plant	$6,039,483.45
Engineer's estimates —uncompleted	1,351.90
Current assets	164,793.75
Deferred assets	11,878.37
	$6,217,507.47

LIABILITIES.

Capital stock, common	$1,500,000.00
Capital stock, preferred	1,437,350.00
Bonded debt (outstanding)	2,708,000.00
Collateral trust notes	356,400.00
Current liabilities	103,000.94
Reserve accounts	67,331.96
Surplus	45,424.57
	$6,217,507.47

The revenue account for the twelve months ended December 31, 1911, was as below:

REVENUE ACCOUNT.
Year Ended December 31.

INCOME.

	1911	1910	Increase
Rentals—telephone	$760,098.46	$744,465.35	$ 15,633.11
Toll service—long distance	11,685.21	11,197.96	487.25
Toll service—suburban	149.58	6,755.07	394.51
Toll service—pay stations	59,191.10	44,874.20	14,316.90
Rentals—Electric Building	75,119.87	74,276.68	843.19
Miscellaneous	4,242.17	5,592.74	1,350.57*
Gross income	$917,486.39	$887,162.00	$ 30,324.39

EXPENSES.

Service	$122,163.11	$112,309.46	$ 9,853.65
Maintenance	142,687.45	156,205.78	13,518.33*
Extraordinary		1,167.05	1,167.05*
General	94,416.78	98,835,39	4,418.61*
Taxes	58,556.60	45,912.14	12,644.46
Electric Building	46,246.54	51,164.38	4,917.84*
Bad and doubtful debts	16,649.17	11,767.74	4,881.43
Leased right-of-way, lines and contracts	2,311.83	3,571.56	1,259.73*
Miscellaneous	3,117.13	2,360.48	756.65
Total expenses	$486,148.61	$483,293.98	$ 2,854.63

SURPLUS.

Gross income	$917,486.39	$887,162.00	$ 30,324.39
Total expenses	486,148.61	483,293.98	2,854.63
Net income	$431,337.78	$403,868.02	$ 27,469.76
Reserves	$ 6,000.00	$ 1,500.00	$ 4,500.00
Depreciation	152,111.93	129,251.14	22,860.79
Total net income	273,225.85	273,116.88	108.97
Interest on mortgage bonds	135,400.00	135,400.00	.....
Interest on collateral trust notes	23,760.00	28,512.00	4,752.00*
Discount on collateral trust notes	3,326.40	3,326.40	.....
Dividend on preferred stock	86,241.00	86,241.00	.....
Total	248.727.40	253,479.40	4,752.00*
Surplus	$ 24,498.45	$ 19,637.48	$ 4,860.97

*Decrease.

The officers and directors of the Cuyahoga Telephone Co are: Charles A. Otis, president; Charles Y. McVey, vice-president and general manager; E. G. Tillotson, M. C. Harvey, F. H. McKnight, Frederick W. Stevens, H. G. Dalton, Harry Coulby, N. C. McLoud, Bascom Little and F. A. Davis.

Claim Northwestern Bell Wrecked Independent.

Jesse Van Valkenburg, a Minneapolis attorney, has intervened in a foreclosure suit brought by the Minnesota Loan and Trust Co., of Minneapolis, against the Minnesota Central Telephone Co. The trust company's action is based on the assertion that the telephone company has defaulted on its bond interest. Mr. Van Valkenburg represents minority interests in the company, a majority of the stock of which is held by the Northwestern (Bell) Telephone Exchange Co., who declared this to be untrue.

It is claimed by these minority stockholders that the Northwestern Bell has controlled the Minnesota Central company since 1905 and has managed it since that time with the deliberate intention to wreck the organization, formerly Independent, and to "freeze out" the minority holders. It is further asserted by the minority interests that the company actually had the money on hand to meet its bond interest at the time it is said to have defaulted and that the Northwestern allowed it to default, nevertheless, in order that this foreclosure action might be started, permitting the Bell to later bid in the Minnesota Central property at a low figure.

Baltimore Association Gathering Data.

At a recent general meeting of the executive committee of the Protective Telephone Association, of Baltimore, Md., it was announced that a mass of information about rates and services in various cities throughout the country would be submitted in a report at a meeting of the association in a few days. Dr. A. R. L. Dohme, its president, reported that nine-tenths of the big business, mercantile and financial institutions of Baltimore have enrolled as members of the association. Just when the public mass meeting will be held to protest against the rulings of the Maryland Public Service Commission in the telephone case has not been decided, but it thought a date will be set as soon as the detailed report from other cities is received.

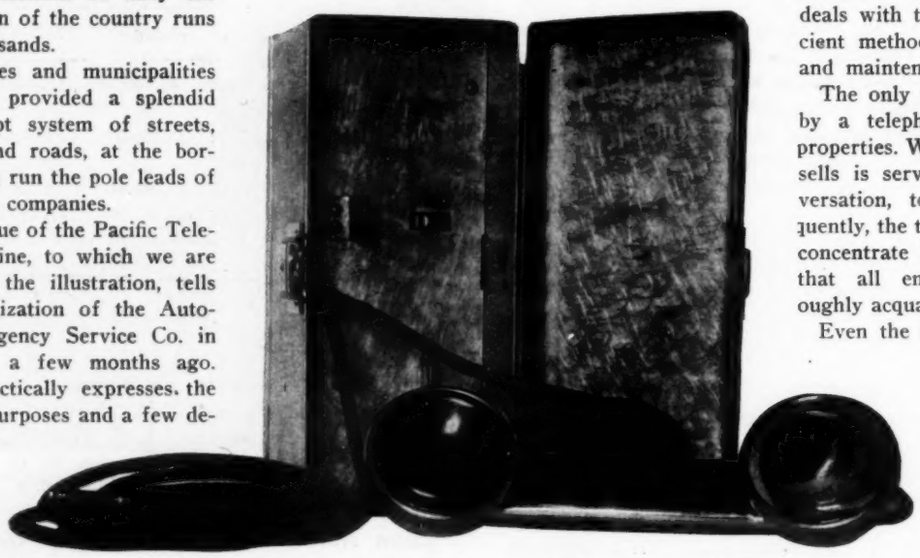
Automobile Emergency Service.

Several times in the past few years TELEPHONY has referred to the use of telephone lines by automobilists in cases of emergency. Its value in quickly bringing aid to the unfortunate automobile enthusiast who possibly had become stranded several miles from a garage was early recognized. Several telephone companies in various parts of the country installed a wayside telephone service specially for this purpose.

Southern California, by virtue of its climate and topography, is able to secure the greatest utility of the automobile, and the number of machines in daily use in that portion of the country runs into the thousands.

The counties and municipalities therein have provided a splendid and well kept system of streets, boulevards and roads, at the borders of which run the pole leads of the telephone companies.

A recent issue of the Pacific Telephone Magazine, to which we are indebted for the illustration, tells of the organization of the Automobile Emergency Service Co. in Los Angeles a few months ago. Its name practically expresses the scope of its purposes and a few details of its operations may be of interest.



Automobile Emergency Sets Which Are Used in Southern California.

This corporation has installed on the poles of the Pacific Telephone & Telegraph Co. telephone boxes at intervals of approximately one mile. These distances depend upon the extent of use of the road, over 200 miles of road being thus equipped at present. Locations and surveys are completed for the balance of the district.

A subscriber to this service, by virtue of a yearly contract with the Automobile Emergency Service Co., which has a long-time contract with the telephone company, receives from it a key to these boxes, and a small metal case containing a battery, transmitter, receiver, cord, and plug, as shown in the illustration.

The boxes are attached to the poles at a height convenient for use without leaving a machine. Where the telephone leads are on a private right of way, the line to the box is extended to a stub pole at the side of the road. In each box is a jack and a ringer and a sign giving its number and that of the nearest garage and physician, as well as the name of the nearest telephone exchange. The automobilist has but to open the box and plug in to be in telephonic communication with the whole territory of the Bell company.

Arrangements have been made with every garage, about eighty in number, in the district covered by this service, whereby gasoline and all other supplies are delivered promptly and without charge to any pole station. In the case of a total breakdown needing shop work, the disabled machine is towed, without cost, to the nearest garage. The emergency service company also issues to its subscribers road bulletins, corrected by weekly supplements, which give authentic and up to date information as to hotels, condition of roads, distances, etc. It also issues letters of credit in coupon form which can be cashed as needed at any garage. This sort of service is along different lines from any previously announced.

That the enterprise is receiving the prompt and enthusiastic support of automobilists is shown by a rapidly increasing list of subscribers. The emergency value of the service is apparent at once, and the fact that a telephone subscriber, while motoring for long distances on pleasure or business, is in practically the same communication with every other telephone of the system as if he were at his office or home adds to his appreciation.

Louisville Home Telephone Co. Investigating Scientific

The Louisville Home Telephone Co., Louisville, Ky., has just started a most interesting campaign toward developing its earning capacity to a greater extent. The question which the Louisville company has taken up deals with the introduction of efficient methods in line construction and maintenance.

The only staples "manufactured" by a telephone company are its properties. What the company really sells is service, facilities for conversation, to the public. Consequently, the telephone manager must concentrate his efforts to the end that all employes become thoroughly acquainted with their duties.

Even the most progressive plant offers a fertile field for work of this kind. Telephone construction gangs necessarily operate in isolated territory when extending their company's lines. They are often several miles from the offices, and consequently the lineman falls into the habit of taking his time in his work. When he ascends a pole, he views the landscape from time to time, and possibly chats with the chief trouble clerk over the wire. It is not the purpose of the manager, however, to hasten the line gangs unduly, for construction work must be handled carefully to avoid accident; but the man up aloft must be made to realize that he should attend just as strictly to business as the man on the ground who is pushing his way along an excavation for underground cable.

"We have realized that telephone construction work proceeds perhaps a bit too slowly," said Phillip S. Pogue, general manager of the Louisville Home company, "and we are now working out policies of up to date management for the gangs, so that each man will put in a full day's work when he is on the job, making him more valuable both to himself and to us.

"For example, we are trying to educate the men to a point where they will not turn around a couple of times looking for a bolt before they pick it up. That's just a simple example of the general policy."

In accordance with Manager Pogue's ideas, the foremen of the company have been instructed to urge their subordinates to keep their minds on their work every minute. This is the keynote of scientific workmanship, for, as in the case cited, if the lineman has an accurate notion of where the bolt he desires is, he will not turn around several times looking for it. The foremen, therefore, are constantly urging the men under them to keep everlastingly at it.

Although the plans of the company are in embryo, consisting chiefly of education along the lines of mental concentration and application in the working force, the officials are enthusiastic over results already discernible.

"When we get the force carefully trained to a standing where we are sure that every man is giving us our due in the way of conscientious work, I might consider the question of prizes more favorably," Mr. Pogue stated. "Our new policies

are just being built up. We hope in time to have them minute in detail, so that the amount of labor involved in each of the several departments of telephone construction will be pretty reliably determined. This will enable us to balance department against department, efficiency against possible deficiency, and generally enhance the profit earning power of the plant and its force."

Plan to Pension Telephone Employes.

Twelve thousand employes of the New England Telephone & Telegraph Co. are directly concerned in an old-age and disability pension plan that will go into effect July 1.

Full details of the plan are not announced because certain minor studies remain to be completed, but, it is said, there is no reason to apprehend any postponement of the operation of the plan beyond the time stated.

It was definitely settled that the pension plan will not involve any contributions by employes out of their wages. The expense is to be entirely assumed by the telephone company. It was also said that there are to be permissive and compulsory retirement provisions, under certain conditions and at certain ages, in order to maintain the efficiency of the service to the public, but these provisions will guard against the anxieties of old age.

This is one of several welfare plans that have been subjects of study during the last year or two. One of these that has been in operation several months, and with excellent results, is a plan for considering the question of injuries suffered by employes entirely from the standpoint of the moral obligation of an employer, rather than from the narrower standpoint of legal liability.

Kentucky Company Launched.

The Farmers' Mutual Telephone Co., of Franklin, Ky., which completed organization a short time ago, has announced that it is prepared to begin business with a list of 200 patrons. An up-to-date exchange has been installed and a toll line run to Temperance.

From the Patent Office

By Max W. Zabel

Combined Police and Telephone System.

A. D. T. Libby, Elyria, Ohio, 1,023,256, April 16, 1912; assigned to Dean Electric Co.

In this composite system consisting of a combined police and telephone system, a main station and a plurality of substations are connected by a pair of conductors. A third conductor connecting the substations and connected at its terminals to the circuit of the pair of conductors is used for sending the police signals.

Ground Clamp.

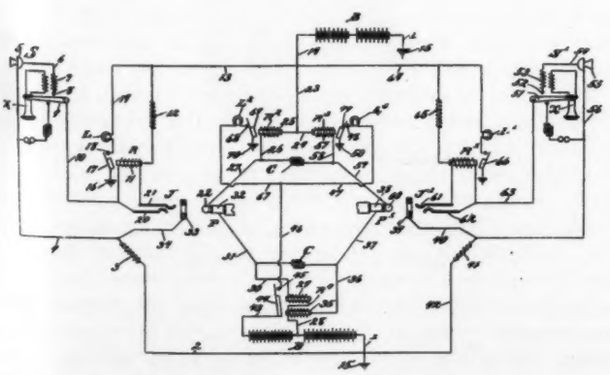
H. W. Pleister, Westfield, N. J., 1,024,021, Apr. 23, 1912; assigned to H. B. Newhall, Plainfield, N. J.

In this ground clamp is a bridge adapted to be placed against a pipe and a locking lever mounted in the bridge, is adapted to receive the ends of the band. It draws them closely together to make a good connection with the pipe, and is locked in position to maintain the contact.

Central Energy System.

H. P. Clausen, Rochester, N. Y., 1,024,498, Apr. 30, 1912; assigned to Stromberg-Carlson Telephone Mfg. Co.

Impedance coils 3 and 12, are the means through which the

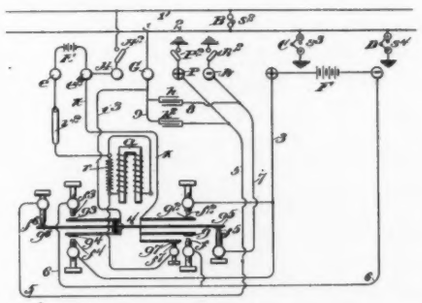


line circuit of each substation is connected to the common battery *B*. Each line has a clearing out relay *R* to control the line lamp *L*. This relay is shunted out when the plug *P* is inserted in the jack *J*. The clearing out relays R^2 and R^3 each control their respective supervisory lamps, but are at the same time under the control of a controlling relay R^4. This latter relay controls by means of its armature 44, the circuit through the clearing out lamps L^2 and L^3.

Pole Changer.

E. M. Tormin, Brookline, Mass., 1,024,463, Apr. 23, 1912; assigned to Holtzer-Cabot Electric Co.

The circuit controlling springs g^2, g^5, g, g^7, g^8, g^4, and g^6 con-



trol not only the connection of the battery *F* to the line conductors 1 and 2, but also with each circuit change, open or close the circuit of the condensers *h* and h^2. The vibrator is designed to operate continuously through connection to the battery *E* and is designed to provide alternating current to operate the signal *B*, and pulsating positive and negative current to operate the signals *C* and *D*, respectively.

Automatic Substation Equipment.

G. W. Lorimer, Piqua, Ohio, 1,024,088, April 23, 1912; assigned to Western Electric Co.

A sending device for automatic exchanges, is described. It is applicable for those systems in which when a call is instituted by a substation, the central office mechanism responds to the temporary grounding of one of the wires leading to the substation. The device contemplates a main spring and a gear train driven thereby. An electromagnetic escapement is provided for this gear train. A contact dial is also provided with which a brush is adapted successively to engage the contacts thereof. Manual winding means for the main spring, self locking against return to normal position when the main spring is partially wound are also provided.

From Factory and Salesroom

Conventions: Indiana Independent Telephone Association, Indianapolis, May 15, 16; Florida Telephone Association, Atlantic Beach, Fla., May 15, 16; Association of Railway Telegraph Superintendents, New York, June 4-7

A New Magneto Harmonic Ringing System.

By Alexander C. Reid.

The application of the harmonic principle of selective signaling in telephone practice met with indifferent results until the year 1903. Since that time several telephone manufacturing companies have developed harmonic ringers which have the same general form as the well known polarized ringer. The armature is spring mounted however and the ringers differ from one another in mechanical details.

The harmonic ringer was first used upon common battery telephone lines. The absence of all ground connections and the permanency of the ringer operation under varying line conditions, once it was properly adjusted, led to its present position as the standard selective ringer for common battery systems.

The frequencies used are 16⅔, 33⅓, 50 and 66⅔ cycles per second. The 16⅔ cycle ringer is wound to 2,500 ohms and the other three to 500 ohms each. A condenser of approximately 1 M. F. capacity is used in series with each ringer to stop the flow of battery current on common battery lines and to assist in controlling the flow of the ringing current through the ringers, as a set of ringers of these frequencies and resistances are practically inoperative without the condensers.

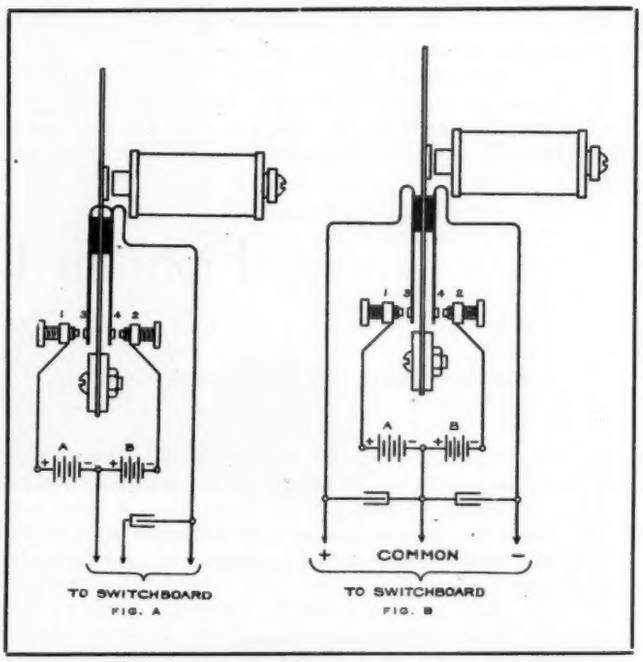
The power plant to operate such a system, consists of a four-frequency ringing generator operating from the local light or power circuits; or the more economical harmonic converter which operates from the exchange storage battery, transformers being used to step up the voltage to that necessary for ringing.

The value of the harmonic ringer for four party selective ringing for magneto telephone systems was appreciated at an early date, but its application was hindered by several difficulties.

The system of frequencies used on common battery lines did not apply equally well to magneto lines. The current from the subscribers' hand generators when calling central, tapped the low frequency 16⅔ cycle bells giving false signals. This trouble was partially remedied by special commutator attachments and by using generators giving a weak current but such means were marginal and depended more or less upon the knowledge and skill of the installer, for successful operation. A system using frequencies sufficiently high that the lowest frequency ringer would not be interfered with by the current from the subscriber's hand generator appeared to be the logical solution of this difficulty.

Another difficulty to the application of harmonic ringing to magneto exchanges, previous to the development of the harmonic converter, existed in the source of ringing current. Many towns did not have a twenty-four hour power or lighting service and therefore a ringing generator could not be used. The harmonic converter was used in common battery telephone plants and then it was used for magneto systems by substituting a battery of dry cells for the storage batteries used in common battery exchanges, but the losses in the transformers proved to be too steady a drain upon the dry cell battery for economical operation.

In many cases, the converter was started by means of a relay operated from the ringing keys on the switchboard. The converter was therefore idle when no ringing was being done, and that assisted in prolonging the life of the batteries. A cheaper converter and more economical use of the dry cell battery was still desirable to make the system satisfactory for magneto exchange operation. To meet these conditions, the harmonic ringing system was radically changed. In order that the low frequency bell would be of a frequency sufficiently high not to be interfered with



Circuits of Magneto Harmonic Ringing Systems.

by the current from the subscribers' hand generators, the frequencies of 30, 42, 54 and 66 cycles per second were adopted.

The ringers were all wound to the same resistance, 1,000 ohms. It was found that these ringers would operate satisfactorily without condensers being connected in series with them. This permitted their installation in magneto telephones without a change in the wiring, when bridging telephones were converted to harmonic selective ringing. The transformers have been eliminated from the converters used with this system and two batteries of 60 or more dry cells each, supply current at a voltage sufficiently high to be impressed directly upon the line for ringing.

Fig. A is a skeleton circuit diagram of this converter. Batteries *A* and *B* have opposite polarities connected to the contacts 1 and 2. The two springs 3 and 4 make contact alternately with these two contacts and as the other two ends of the batteries are common to one of the ringing leads, an alternating current is impressed upon the ringing leads which are connected to the ringing keys. A condenser which is connected across the ringing leads when ringing is being done, by contacts upon the ringing keys, reduces the spark at the contacts 1 and 2. It acts as a shunt across the circuit and while an additional load upon the batteries *A* and *B* when ringing, is necessary for the purpose stated.

A system which is a development of the harmonic ringing system just described and primarily intended for magneto exchanges, has been developed by the Cracraft-Leich

Electric Co. This system uses positive and negative currents of 42 and 54 cycles per second. After much experimenting, the harmonic ringer has been changed slightly in order that it may be operated by pulsating current. As a result, four party metallic ringing may be obtained from two vibrators, each giving positive and negative currents of their respective frequencies.

Fig. B is a skeleton circuit diagram of this converter. It will be readily seen that it agrees closely with Fig. A. The current from the batteries is carried to the contact springs and from there to the terminals of the master keys. Condensers are connected permanently across the battery leads of each converter.

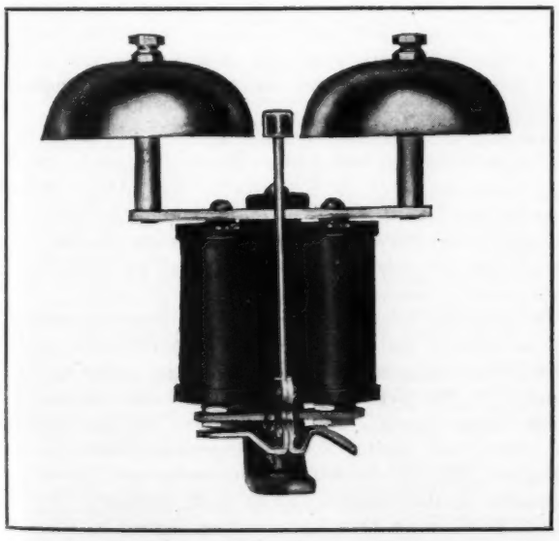
When current is not being used for ringing, the polarity and voltage remains constant across these condensers, and as their insulation resistance is very high, there is no loss of current.

The harmonic ringer used with this converter is identical with the standard Cracraft-Leich harmonic ringer with the exception that the armature is bent away at an angle from the right hand pole piece. This constitutes the biasing feature of the ringer.

The use of the 42 cycle biased harmonic ringer practically avoids interference with the low frequency currents from the subscribers' hand generators thus preventing false signals. Due to the impedance being greater to the passage of current at higher frequencies, the 54 cycle current is greater for a given line thus producing better ringing. As one loop or wave of a complete cycle is used, it is claimed that quite a saving in dry cells is effected in the course of a few months owing to the current used for operation being reduced approximately one-half.

Two ringers tuned to 42 cycles operating upon positive and negative currents respectively, are quite free from interference, the margin of adjustment being approximately that obtained by a difference of 12 cycles in the frequency. The same is true in regard to the 54 cycle ringers.

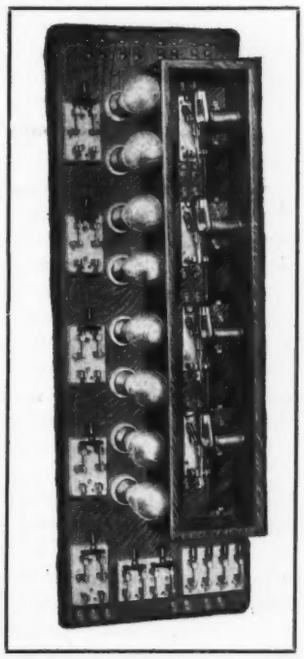
A converter of this system having a duplicate arrangement, consists of four vibrators, two of which are used at a time, the other two being held in reserve. This statement may be appreciated by referring to Fig. B which shows that two ringers, one operating upon positive and the other upon negative current, may be operated from one vibrator.



The Pulsating Harmonic Ringer.

It is readily appreciated that this small number of parts constitutes a saving in the initial installation. A further saving consists in the fact that only two ringers need be carried in stock as the first two parties use 54 cycle ringers and the third and fourth parties use 42 cycle ringers.

All ringers are wound to 1,000 ohms resistance and as the tuned armatures are removable, the 54 cycle ringer may be converted to 42 cycle by replacing the tuned armature with one tuned to 42 cycles or a 42 cycle ringer may be converted to 54 cycle in a similar manner.



The New Type Converter.

It will be noticed by reference to the illustration that this converter is self contained. Ringing protection is mounted on the backboard and consists of tantalum lamps which are very satisfactory for this purpose. Terminals are provided at the bottom of the backboard for all battery connections and at the top for the switchboard connections. As the condensers are wired permanently in the converter cabinet, it is not necessary to make any changes in the switchboard wiring or to provide extra contacts on the switchboard keys.

The converter when shipped from the factory is tuned and all ready for operating, it only being necessary to run generator wires from the terminals at the top of the backboard to the master keys or ringing keys of the switchboard.

The vibrators are operated by three crowfoot cells which are an efficient and satisfactory source of current.

Book Review.

VALUATION OF PUBLIC UTILITY PROPERTIES; by Henry Floy. Published by McGraw-Hill Book Co., New York; 402 pages, illustrated, price $5.

This book written by one who has specialized in valuating public utility properties, is one of the first published treating of a subject which has in the past few years, come to occupy an important place in engineering work.

A glossary of the terms used in the valuating of properties is contained in the first chapter. The meaning, as generally ascribed to the terms, is given. In cases of several meanings for the same term, all are presented and the sense in which the term is used is explained.

The various reasons why appraisals are undertaken are discussed. The steps to be taken in preparing for an inventory are described and the items to be included in it are summarized in a diagram. They are divided into: structural values, which include the net cost of physical plant, contractor's profit, engineering, contingencies, etc.; development expenses including expenses preliminary to beginning plant construction, overhead expenses during construction, working capital and superseded plant; intangible value which takes in franchises, good will, going value and contracts.

These items are all quite fully discussed, court decisions and commission rulings being quoted to indicate the trend of theory and practice.

A chapter of fifty pages is devoted to the subject of depreciation and the principle to be considered in estimating depreciation is summarized.

The book includes appraisals of public utility properties in Greater New York, which cover some of the largest electric

street railway systems and also valuations of some important gas and electric properties. In the appraisals the most recent methods in valuation work were developed and indicate what may be taken as the standard of the best practice of the present time.

The book is a compilation of much which has been published in various journals at different times, but which had not been brought together for ready reference. It will be of benefit to many who are engaged in work dealing with public service corporations and commissions.

The Corwin Company's New Perpetual Catalog.

The Corwin Telephone Mfg. Co., Chicago, has just issued a perpetual telephone catalog which describes all the well known Corwin apparatus for intercommunicating purposes. The first issue of the catalog comprises eleven sections and additional sections will be furnished from time to time.

This catalog in addition to describing in detail the various intercommunicating systems of the Corwin company, gives explicit directions as to the installation and wiring and a full explanation of the operation of each system. It is fully illustrated with circuit and wiring diagrams so that no difficulty should be experienced in installations.

One section of the catalog which is extremely interesting is that which deals with construction details and materials. In this part are given specifications and cabling plans; cabling and wiring details showing how telephone wiring and cable should be installed in various of types of buildings. The material which is used in all such installations is described and information given as to the manner in which it should be installed.

It is evident that a great deal of care has been taken in compiling the catalog which is a valuable handbook for those interested in intercommunicating systems.

Bulletin of Construction Materials and Supplies.

The latest bulletin the Kellogg Switchboard & Supply Co. has to offer the telephone trade is the Number 60, which bears the title of "Construction Materials, Tools, Miscellaneous Supplies and Guide to Good Construction."

It is stated that every effort has been made to list in this bulletin, the best materials, apparatus, etc., of proven merit. In this way it is believed the customer may obtain what he needs with the assurance that he is not buying something of doubtful efficiency.

This book also serves as an aid and guide to good line construction, suggesting in its different chapters the best methods in various phases of telephone line construction.

For instance, in the section on wire, it is said:

"List No. 126 insulated wire has a No. 18 B. & S. gage copper conductor, rubber insulated to a total diameter of 7/64 inches, over which is placed a heavy saturated weatherproof braid. This protects the rubber insulation from mechanical injury and also prevents its hardening from exposure to sun and wind.

"This grade of wire should be used for all outside wiring exposed to the weather, and the list No. 126 single conductor is usually the most convenient form for connecting open wires into cable boxes. When used for this purpose it is commonly called 'spider wire.'

"It is also most suitable for forming hand made cables to bring 100 wires or less into small central offices where the open lines can be brought to a single 'junction hole' within fifty feet of the exchange building. When so used no box or arrester is needed on the pole."

The following information is given regarding dry cells:

"One point we wish to impress on our customers in connection with dry batteries, is the importance of not allowing them to become old and stale before being placed in service. Every dry battery starts to dry out and deteriorate the moment it is made and actual tests have determined that an absolutely fresh battery will give much longer life than will those that have remained in storage even a few months before being placed in service. This 'shelf deterioration' as it has come to be called, has cost dry battery users thousands of dollars."

The bulletin is of the regular Kellogg size, 7¾ ins. x 10 ins.; contains 68 pages and is bound in a handsome brown cover. Illustrations are plentiful and the pages are printed with good, readable type.

Exchange managers planning the purchase of supplies for line construction will find this book of assistance and convenience in ordering.

Another Prosperity Report.

More evidence of the increased business that telephone manufacturers are now handling comes from the Suttle Equipment Co., McLeansboro, Ill., dealer in and rebuilder of telephones. It reports that on account of repeat orders for telephones and repair parts its business is double that of a year ago.

Paragraphs.

Roy D. Lillibridge, Incorporated, specialists in technical advertising, announce the removal of their offices to suite 2109-10-11-12 Trinity Building, 111 Broadway, N. Y.

The Century Telephone Construction Co., Buffalo, N. Y., is installing a 100-line common battery private branch exchange switchboard for the Johnston Harvester Co., Batavia, N. Y. The initial installation will provide for 60 telephones and trunk line connection will be made with the Federal Telephone & Telegraph Company's exchange at Batavia.

Leeds & Northrup Co., Philadelphia, Pa., has recently issued two bulletins. One of them describes mica condensers which are used as standards in calibration work. The other bulletin describes the Brooks deflection potentiometers which are used in commercial and standardizing laboratories as an every day working standard.

John W. Coffey, of Indianapolis, designer of the Coffey System of Accounting for telephone companies, has secured room 832, at the Claypool Hotel, Indianapolis, at which the Indiana association will hold its annual convention next week. Mr. Coffey will there personally demonstrate the merits of his system, which he is now installing widely throughout the country.

Sam W. Menefee has resigned as manager of the Kansas City branch of the Stromberg-Carlson Telephone Mfg. Co. being succeeded by C. W. Schaefer of the Chicago office. Mr. Menefee has been engaged in the telephone industry for the past eight years, having been manager of the Kansas City office of the Stromberg-Carlson company for the last three years.

Mr. Menefee has not announced his future intentions but it is understood that he has several propositions in view.

The Clark Electric Meter Co., Chicago, owing to the great demand for its meters, has secured a larger factory at 219 South Clinton street. The new quarters are light and roomy and offer every facility for the extensive production of the company's line of voltmeters, ammeters, and volt-ammeters. Shipments of these meters can be made promptly.

Catalog Number One has just been issued by the Fahenestock Electrical Co., 129 Patchen avenue, Brooklyn, N. Y. This book illustrates and describes most of the standard sizes and shape of the Fahnestock spring binding posts. It shows how the Fahnestock connections may be used for innumerable purposes in telephone work such as for line and test connectors, telephone cable connecting strips and connecting blocks. The advantages of the Fahnestock methods of connections are fully set forth. The catalog is interesting to telephone men who are on the lookout for new ideas in the connection of wires to terminals.

Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued, and Any Items of Interest as to Their Plants and Systems

PERSONAL.

SAMUEL G. McMEEN, member of the engineering firm of McMeen & Miller, of Chicago, was recently elected president of the Columbus Railway & Light Co. of Columbus, Ohio. The Columbus Railway & Light Co. operates all the electric traction, lighting and power properties of the Columbus Edison

Samuel G. McMeen.

Co., the Columbus Light, Heat & Power Co., the Columbus Traction Co. and the Columbus Railway Co.

Mr. McMeen's new connection is a promotion from the presidency of the Mt. Hood Railway & Power Co. of Portland, Ore. He remains a partner in the firm of McMeen & Miller.

C. J. BENJAMIN has been appointed manager of the Federal Telephone & Telegraph Company's exchange at Holley, N. Y., and has taken up his new duties.

OWEN D. HARRISON has been appointed local manager of the Northern Illinois Telephone Company's exchange in Earlville, Ill.

F. DOUGLAS WATSON, general manager and secretary of the Constantinople Telephone Co., arrived in England recently. He will return to Constantinople in about a fortnight's time.

L. L. BILLUPS, manager of the Paducah, Ky., exchange of the East Tennessee Telephone Co., has been made district commercial manager. W. H. Howell, formerly assistant manager at Paducah, has succeeded Mr. Billups.

O. T. PICKARD, assistant general manager of the Memphis, Tenn., office of the Cumberland Telephone & Telegraph Co., has been transferred to the McKenzie office as district manager. His successor has not yet been named.

H. M. GRIFFITH, manager of the Peoples Home Telephone Co., Leavenworth, Kans., recently addressed members of the Ad Club at the regular weekly noon-day luncheon at the Lindell hotel. Mr. Griffith took as his subject "Advertising by a Corporation."

PROF. DUGALD C. JACKSON, of Boston, consulting telephone engineer for the British government, will also sail in the near future for England to appear as an expert in the valuation proceedings being carried on between the post office department and the National Telephone Co.

S. A. LANE, manager of the Federal Telephone and Telegraph Company's Geneva exchance, has been promoted to position of general manager of the Niagara County Home, Niagara Falls, N. Y., just vacated by R. Max Eaton. F. K. Best will succeed Mr. Lane as manager at Geneva.

J. F. VAN VORS, for seven years manager and superintendent of the Dubuque Telephone Co., has accepted the position of district plant manager for the Iowa Telephone Co. He will for some time continue to manage and superintend the operations of the Dubuque company.

JOHN M. COSGROVE, wire chief for the Lawrence Home Telephone Co., Lawrence, Kans., and Miss Kathleen More, of the same company, were united in marriage April 23, 1912 and Mr. Cosgrove has been wire chief for the Home company for the past three years and Mrs. Cosgrove has served as local and toll operator for two years.

THADDEUS S. LANE, president of the Interstate Consolidated Telephone Co., of Spokane, Wash., will start soon on a trip of inspection over the company's lines. Mr. Lane has just purchased a Packard touring car from the local agency and will make the trip in the automobile. He will be accompanied by H. R. Risley, general manager of the lines in Montana, and two other officials of the company. The trip will consume several weeks and will cover 1,000 miles.

ELAM MILLER, who was widely known on the Pacific Coast as commercial engineer with the Pacific Telephone & Telegraph Co., has succeeded Dr. Frank J. Jewett as transmission and protection engineer of the American Telephone & Telegraph Co., with headquarters in New York. Dr. Jewett becomes the assistant chief engineer of the Western Electric Co. Mr. Miller entered the A. T. & T. organization in New York on the first of the year as Dr. Jewett's assistant.

HAMMOND V. HAYES, of Boston, will sail for Europe on May 14 to testify as an expert in the proceedings under which the British post office department is taking over the property of the National Telephone Co., of England. The question at issue is the price which the government shall pay for the telephone system. The toll lines of England were taken over by the post office in 1906, and since the first of the present year all local lines have been operated by the government. Dr. Hayes will appear on behalf of the telephone company at the hearings.

OBITUARY.

DR. A. D. PYKE, of Rommey, Ind., died at his home, on April 17, after several years of ill health. He was one of the pioneer telephone men of the state. Some twenty years ago Dr. Pyke had a territory in which his practice was heavy. He frequently found calls waiting him after returning from the vicinity from which the calls came. This led to his putting in a wire along fences and through woods to a point about twelve miles from his home thus enabling him to get additional calls from that neighborhood, if any had been received. After this had been in operation some months a rural resident came to him and asked if he could not get in on the line so that he could get a Rommey connection. He was put on and this was the beginning of the Pyke telephone system, which had finally 300 miles of copper metallic circuit, and took in all the towns in that part of the state. Dr. Pyke was somewhat of a genius and made his first switch board. His system was sold about six years ago to the Bell company, when he retired from active life, owing to his ill health. As long as he was in any way identified with the work he was a regular attendant at all meetings either local, state or national, and was one of the best-known Independent telephone men in the state.

NEW COMPANIES.

SEALE, ALA.—A company has been formed to give local service in Seale. B. G. Jennings is president, and L. J. Lewis is secretary and treasurer.

LOCKESBURG, ARK.—A company is being organized here, capitalized at $50,000, for the purpose of establishing a telephone system over the entire county.

RAISIN CITY, CAL.—The Raisin City Rural Telephone Co. has been organized with the following officers: J. R. Moore, president; L. A. Pearson, vice-president; J. M. Kuns, secretary; J. B. Flickenger, treasurer. The company will connect with the long distance lines of the Pacific Bell.

SMYRNA, DEL.—The Smyrna & Western Telephone Co. has been incorporated here, with a capital stock of $25,000.

MEREDOSIA, ILL.—The Farmers & Merchants Telephone Co. is being formed here. Among those interested are: C. D. Kappal, president of the Meredosia Commercial Association; L. F. Berger, William Meyer, George Mayes, Riney Steinberg, Charles Schlieker, William Duvendack and William Roegge.

SEYMOUR, IND.—The Albering Telephone Company has filed articles of incorporation. The initial capital stock is $5,000. This will be increased later. The company will build in Jackson county. The incorporators are: Herman Albering, Henry Duwe, John Anderson, Louis G. Mascher and others.

GILBERT, IOWA.—The Gilbert Telephone Co. has been incorporated by H. Sawyer, H. Jones and P. Orning. The authorized capital is $10,000.

MOORHEAD, IOWA.—The Sioux Valley Telephone Co. has been formed, capital stock $400, by A. McElwain, Chas. Seaton and Chas. Knapp.

THAYER, IOWA.—The Eastern Union Telephone Co. has just been organized here, with a capital of $650. It will build a number of lines out of Thayer. The new company owns a one-third interest in the Thayer Telephone Co. The officers are: President, M. Early; secretary, Daniel Swindler.

TOLLSBURG, KY.—The Louisa & Webbville Telephone Co., capital stock $1,000, has been formed here by R. Collinsworth John Hall and W. V. Roberts.

(Continued on page 44, Advertising Section.)

In the Rural Line Districts

Mrs. R. M. Coleman is now in charge of the Bell Telephone Exchange. At present she is being assisted by Loveless Ulrey at night. We hear her husband will have the night work as soon as he can arrange his affairs. —Marshall (Mo.) Index.

Albert Lemon is again to be here in the telephone exchange at this place, after an eight months' vacation. We are all glad indeed to hear his melodious voice once more and hope his vacations will be few and far between, although we fully realize he was much in need of a good rest.—Sutter Item, Carthage (Ill.) Gazette.

A new telephone line, six miles long, and located west of the river, has just been completed. The number of the new line is 971, and much is being said among the owners as to the best name for it.—Iola (Kans.) Register.

Mrs. W. H. Konrath took charge of the local office of the Ardmore Telephone Company, this week. Mrs. Konrath is an old hand at the job.—Ardmore (S. Dak.) American.

The Toothpick Telephone Company held their annual meeting at Swan Creek Saturday afternoon to elect officers. —Poverty Flats Correspondence, Roseville (Ill.) Citizen.

Fred Lorimer, manager of the Olathe Telephone Company, says that he does not intend to "dun" a single one of the company's 800 telephone subscribers this month. He simply wants to see if each one of them won't pay their telephone bill without a single word being said about it in the paper.—Olathe (Kans.) Mirror.

A tax payer recently revealed the fact that there is one telephone company in Minnesota which has no poles or wires stretched for the purpose, yet its gross earnings amounted to $29, and the company paid a state tax of 87 cents. The company is known as the Carlisle Barbed Wire Telephone Company. It is formed by a few farmers living near Carlisle who have connected their barbed wire fences and use them for telephone lines.—Winnebago (Minn.) Enterprise.

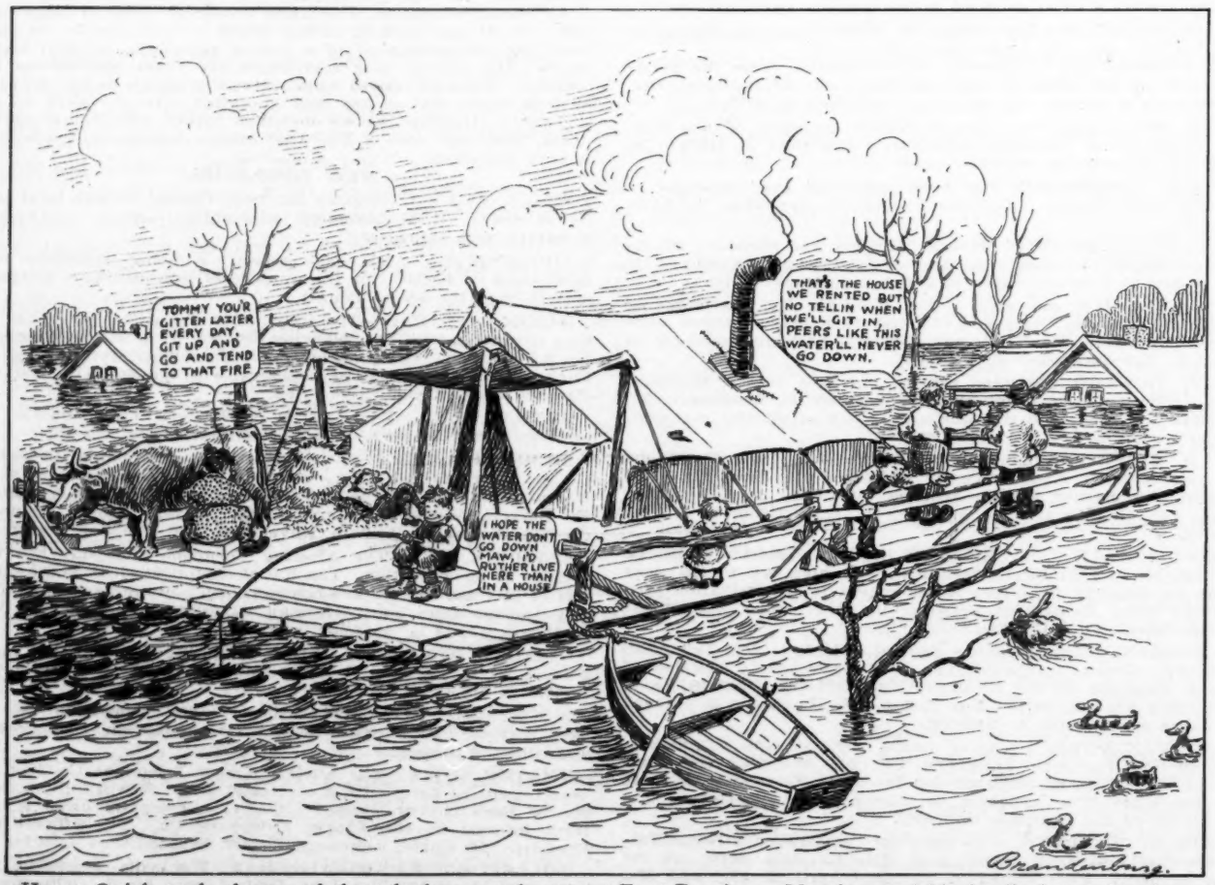
Considerable telephone work was done here the past week. Patrons on lines 192, 191, 196, 195, 189 and 156 took the work in hand. Some of the lines are up to the east line of the township and some of them to the Girard city limits.—North Otter Item, Carlenville (Ill.) Enquirer.

John Smith, lineman for the Independent Telephone Co., was attending business pertaining to the telephone company at Grant Park a couple of days ago. Mr. Smith has been in the company's employ for over two years and never lost an hour during all that time. A steadier man will be hard to find.—Kankakee (Ill.) Democrat.

There was a new telephone line built from here to Russell last week. It is called the Honey Creek line.—Greenville Item, Chariton (Ia.) News.

The directors of the Farmers' Union Telephone Company were out Saturday repairing the telephone lines.—Whirle Corner Correspondence, Seymour (Ind.) Republican.

The telephone men were out on our line last week but made matters worse and will have to make us another visit in the near future.—Rose Hill News, Elliott (Ia.) Graphic.


TOMMY YOU'R GITTEN LAZIER EVERY DAY, GIT UP AND GO AND TEND TO THAT FIRE
I HOPE THE WATER DON'T GO DOWN MAW, I'D RUTHER LIVE HERE THAN IN A HOUSE
THAT'S THE HOUSE WE RENTED BUT NO TELLIN WHEN WE'LL GIT IN, PEERS LIKE THIS WATER'LL NEVER GO DOWN.
Brandenburg.

Harry Quick took charge of the telephone exchange at East Peoria on Monday, and his family have already moved to that city. They cannot get settled down to housekeeping until the river settles down a little and allows transportation to get in better shape.—Delavan (Ill.) Advertiser.